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EDITORIAL NOTES

FOOD EDUCATION CAMPAIGN

WE have good reason to know that the activities of the British Commercial Gas Association in connexion with the National Food Campaign launched at the beginning of April have met with excellent backing from gas undertakings throughout the country. Appliance firms having trained demonstrators on their staffs have put their weight into the Industry's collaborative effort; they are giving great service to undertakings by offering the assistance of their demonstrators. As we mentioned in the "JOURNAL" a few weeks ago, never in the history of the Association has there been such a demand from gas undertakings for B.C.G.A. literature. Each in its particular sphere, the Ministry of Food, the Board of Education, and the Ministry of Information are working together in this important scheme, and the Gas Industry has before it a great opportunity for maintaining goodwill and establishing it in new places—a great opportunity for adding to its prestige. Since the launching of the campaign events have rendered the staging of these highly popular educative demonstrations inappropriate in certain areas in the country. Activities in this direction are necessarily suspended for the time being in those areas. Elsewhere the work continues with increasing usefulness.

We have referred to the prestige value of the Industry's collaboration and widespread support in this national effort. To give the Ministry of Food an accurate story of the work being done by the Industry, the B.C.G.A. has asked gas undertakings for a monthly return of demonstrations held. In April, 21 undertakings—and there are over 700 authorized gas undertakings in the country—took the trouble to comply with the request. The returns indicated that 22,391 people had attended demonstrations. In May the response was somewhat better. Sixty-one undertakings replied, and the returns showed a total attendance of 48,066. It is obvious enough that the information which the B.C.G.A. has been able to pass on to the Ministry of Food in no way represents a true picture of the good work which in fact the Gas Industry is carrying out. Such misleading information can hardly be said to add prestige to the Industry, with its 11 million consumers and its organization for reaching them. The remedy is equally obvious and cannot be regarded as a difficult task.

SCRAP IRON AND STEEL

THE Gas Industry has responded well to the successive appeals of the Scrap Iron and Steel Campaign, but, as Major H. E. Crawfurd points out in a letter which we publish on another page, there is still too great a tendency for those in charge of repair and maintenance departments to draw distinctions between scrap pure and simple and an unknown quantity of material that is being kept in stock against some uncertain use for it in the future. We are all familiar with these distinctions in the domestic sphere, and it is only when we remove from one house to another or come up against some urgent demand for space that we realize the close relationship between plain rubbish and a great many of the things we have treasured in the fond belief that they may be useful at some future date. It is a British characteristic to hoard much that will never in fact be put to use, and the Gas Industry, both on the works side and in the factories of the plant and appliance makers, is no exception to the rule.

In these days it is up to the Gas Industry to decide what it needs to enable it to maintain its essential services, bearing in mind that in addition to its basic requirements of iron and steel for repair and maintenance, for extensions of plant to meet vital load increases, and for ensuring adequate consumer service, it must retain a minimum margin of "spares" for these purposes. Anything that is surplus to these requirements would better serve the national effort by being returned to the steelworks, and we are confident that Major Crawfurd's latest appeal will meet with the response it merits. It will not be easy to decide what should be saved and what should be scrapped, but broadly speaking anything not likely to be put to use until after the war should be turned out. Apart from meeting any sudden movements of population we would suggest that few if any of the old black cookers or out-of-date fires now lying about the works will ever be wanted, and might well be scrapped. Some of the lamp columns now stored might equally well be cleared out, not that we have any doubt as to the need for public lighting after the war, but because we are convinced that in post-war days public lighting will be so far improved that more modern standards will be called for. The same may be true of a good many pieces of plant and equipment, which will become obsolete with the inevitable advance of engineering practice.

It would be a great advantage if the Iron and Steel Control could offer the Gas Industry a supply of new iron and steel in return for its scrap, perhaps not ton for ton, but on the basis of a fixed proportion, but even if that is impossible it must not be forgotten that every ton of metal contributed to the national store will ease the situation and contribute to earlier victory, and a consequent restoration of adequate supplies.

LOOKING AHEAD

IT is quite refreshing in these troublous times to read a Paper such as that given recently by Mr. W. Clark, of West Hartlepool, to a well-attended and enthusiastic meeting of salesmen in the North. The title was "Future Development," and the Author exercised a great deal of imagination in painting a picture of a possible Gas Industry after the war, when coal will no longer be consumed in its raw state. Mr. Clark spoke of future houses equipped with gas-fired central heating and hot water supply, of stainless steel cookers with solid hotplates, raised grill, and, of course, fully automatic ignition, of developments in gas engines and gas turbines and in the supply of bottled gas. He visualized such co-operation between our Industry and the architect and builder that gas using equipment of the type in mind will be considered as part and parcel of the new home, which will be designed and built accordingly. This we must work for. He spoke of air conditioning, perhaps with the addition of ozone, of skilfully planned ventilation systems, of electricity generation by gas; and he concluded his Paper by pointing to the progress our Industry has made during the past twenty years—progress which justifies optimism in looking ahead and working for a new era.

We are living at a time when economic values are somewhat out of joint, when one's outlook is that of day-to-day. But the creation in better times of an era when gas will be used in quantities enormously greater than at present or pre-war will depend on the supply of this gas at a price which will prove acceptable. Upon this will rest the fulfilment of these visions. The strides made in recent years have been the result partly of vastly improved gas-using equipment and a new attitude concerning what constitutes gas service, but also—and this very definitely—of the adoption and application of tariffs designed to make the extended use of gas in home and industry possible for the consumer in competition with other fuels and other sources of energy while at the same time being economic and a sound business proposition to the supply undertaking. During the discussion on the Paper in question Mr. T. P. Ridley emphasized that we must look to the future. Gas prices have of necessity been increased; when we are in a

position to think of reductions, then, unless we are satisfied with the tariffs we have in operation, do not as first step lower the flat rate. While with good salesmanship a certain amount of gas can be sold at a certain price, the full domestic load will not be gained unless the price is competitive with that of coal. This all-important matter of gas pricing was touched upon by Mr. Nisbet in his Address to the Waverley Association. Part of the Address was given in last week's "JOURNAL," the remainder, together with a report of the discussion, will be found on later pages of our issue to-day. Mr. Nisbet has proved by his own experience that inducements of the order of 1d. per 1,000 cu.ft. reduction after a specified quantity of gas has been consumed will not bring increased business. The drop in qualifying quantity must be steep; and, he said, suitable opportunity for carrying out this principle may present itself after the war by retaining as primary rate that necessitated by wartime costs and stepping down sharply to a secondary rate capable of further reduction as consumption is increased.

Town Gas for Ceramic Firing

The section of the "JOURNAL" dated July 3 devoted to Developments in the Industrial Field included an article descriptive of the growth in sales of gas during recent years by the City of Stoke-on-Trent Gas Department in connexion with the work of the ceramic industry. This rapid development in the use of town gas for ceramic firing, which it had been confidently anticipated would continue for some years longer, was unfortunately interfered with by the declaration of war, but Mr. A. Mackay, Chief Engineer and General Manager, in his report for the past financial year, shows how good would be the prospects under more stable international conditions. For the time being, factories engaged on firing glazed tiles for the home trade have suffered a slump, but the demand for gas for firing earthenware advanced during the year by over a million therms. The war, however, besides reducing the glazed tile requirements, has resulted in manufacturers holding over the erection of eleven continuous tunnels of various types. This interruption in the development of town gas for ceramic firing is the more unfortunate in that, as Mr. Mackay says, it comes at a time when designers of tunnel ovens are incorporating a vast experience in newer types of gas-fired kilns for securing the control of heat distribution from end to end of the tunnel, and also completely through its cross-section—thus bringing about the realization of maximum speed and uniformity of firing, which has been the main object of builders of tunnel kilns from the earliest days. This improved use of the heat, and the adoption of re-circulation of the products of combustion, besides giving higher efficiency, should, Mr. Mackay points out, ultimately reduce the length, and make long kilns unnecessary.

The "JOURNAL" Index

With this week's issue of the "JOURNAL" we publish as a supplement the Index to Vol. 230, covering the April-June quarter of the current year. We think it will be agreed that the present Index maintains the standards set by its predecessors and lacks nothing which will enable readers readily to turn up any subject dealt with in the "JOURNAL" during the past quarter.

Personal

Professor J. W. COBB was one of the three recipients of Honorary Degrees conferred by Leeds University this year, the list of which has just been published. The University has this year restricted these Honours to three recently retired eminent Heads of Departments, and Professor Cobb's degree is an Honorary D.Sc.

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Following the release of Mr. J. DAVIDSON PRATT, General Manager of the Association of British Chemical Manufacturers, for special service with the Ministry of Supply as Deputy Director General of Chemical Research and Development, the Association has appointed Mr. R. MURDIN DRAKE, M.Sc., and Mr. ALLAN J. HOLDEN, B.Sc., F.I.C., as Joint Assistant Secretaries and Assistant Managers. Mr. Drake has also been appointed Acting Secretary of the Association of Tar Distillers.

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On Saturday last Mr. T. J. BURNS, F.C.I.S., retired from his position of Deputy Secretary and Treasurer of the Liverpool Gas Company after 37½ years service. Mr. Burns was a past Chairman of the Liverpool Branch of the Chartered Institute of Secretaries, and is still a Vice-President and member of the Council. He has been a Chairman of the Bootle Insurance Committee for twenty years and is a prominent member of the Childwall Golf Club. The directors of the Company have presented Mr. Burns with a silver coffee set and the staff also have subscribed for a handsome bureau. Mr. Burns' services are being retained in a consultative capacity.

In succession to Mr. Burns the Board of Directors have appointed Mr. CHARLES H. LEACH, M.A. (Oxon), A.C.A., as Deputy Secretary and Treasurer. Mr. Leach was educated at Manchester Grammar School proceeding to Brasenose College, Oxford, where he took honours in Mathematics. He served his Articles with Messrs. Bolton & Co., Manchester, joining the staff of the Alliance & Dublin Consumers' Gas Company in October, 1927, as Assistant Secretary.

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On June 22, Mr. F. L. Ball, the local Director of the Mid-Kent Gas-Light and Coke Company, presented on behalf of the staff and employees and many friends in the Mid-Kent Water Company, a gold wristlet watch to Mr. J. H. GREENACRE as a token of esteem on the occasion of his leaving to take up the appointment of Engineer and Manager to the Great Yarmouth Gas Company. Mrs. Greenacre was the recipient of a handbag. Mr. Greenacre had been with the Mid-Kent Company since 1923 and was Engineer and Manager for the past four years.

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Mr. ALEXANDER SIMMONS, Works Manager at the Uddingston Station of the Lanark County Council gas undertaking, is shortly to retire on pension.

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Mr. ARTHUR HARRISON, son of Mr. A. J. Harrison, Engineer and Manager of the Accrington District Gas Board, was married on July 4 to Miss Doris Gregson.

* * *

Mr. C. JAGO GREGG, Manager of Falk, Stadelmann & Co.'s Glasgow Branch, was married on July 5 in Glasgow to Miss Elizabeth Sillars Wilson, of Galston, Paisley. Mr. Gregg is a past-President of the Scottish Iron and Steel and Ironmongery Benevolent Association and a former member of Paisley Corporation, where he served on the Gas Committee.

Letter to the Editor

Scrap Iron and Steel

SIR—Those industries which use iron and steel, or whose equipment involves the use of machinery, have been approached by the Iron and Steel Control with a view to their making available such supplies of iron and steel scrap as are in their possession. There has been a considerable response to this appeal, and that response has been largely helped by the ready co-operation of the Technical Press. There is, however, evidence that there is still a large amount of available iron and steel lying in factory yards and sheds, and in maintenance departments, which might well be surrendered as scrap in the national interest at the present juncture.

Everybody is aware that it is characteristic of maintenance engineers, and those who are in charge of repair and maintenance departments of works generally, and who are keen and conscientious, to make it a habit to keep supplies of spares, and indeed, of obsolete parts and machinery, lest on some future occasion when the need arises they should be found short. There can be no criticism of this attitude. On the other hand, the national need for all the available iron and steel, either as discarded machinery and parts, or as scrap, is so great to-day that it outweighs even the advantages of providing against the future so far as individual firms are concerned.

I am therefore writing to you in order that, through the medium of your paper, I may appeal to heads of firms to see that as much of this kind of material as possible is given up for the purpose of being converted into iron and steel for munitions and armaments. May I suggest to them that even the provision of what may possibly be needed in the future by their own firms should take second place to the urgent national need. We all know that armaments and munitions for the fighting forces are needed in ever-increasing quantities. These cannot be provided in abundance unless a continuous flow of scrap is forthcoming. Therefore I make this further appeal that everyone should join in this drive, even if it involves a little personal sacrifice.

Yours, &c.,

427, Bush House, W.C.2. H. E. CRAWFURD.

July 4, 1940.

Forthcoming Engagements

August.

13.—Irish Association.—Annual General Meeting at Dublin.

24.—Scottish Western Juniors.—Paper by J. Fulton on "Ammonia Recovery."

NEWS OF THE WEEK

It Has Been Decided in view of the recent developments to cancel the Summer meeting of the Western Junior Gas Association which was to have been held at Minehead next Saturday.

A Scheme for Plant Extensions at the gas-works has been approved by West Bromwich Town Council. Approval was expressed at a meeting of the Council on July 3, when the cost of the proposed extensions was given as £18,505.

The Attention of Members of The Institution of Gas Engineers is drawn to the recently issued pamphlet on "Factory Ventilation in the Black-out," issued by the Home Office and obtainable from H.M. Stationery Office, York House, Kingsway, W.C.2, price 3d. net.

The Gas Poker Campaign of the Severn Valley and Gas Consolidation Groups includes window displays tying-up with waste paper salvage. The Lichfield Gas Company used part of their showroom window as a depot for the collection of used paper, and by the end of the first week, they had received 1 ton 3 cwt. which was sold in aid of local war charity funds.

Notice is Given of the intention of the Ennerdale Gas Department to apply to the Board of Trade for a Special Order under the Gas Undertakings Acts, 1920-1934, to extend the limits within which the undertaking is authorized to supply gas to include the parish of Winscales in the Rural District of Cockermouth, except so much of such parish as is within the limits of gas supply of the Workington Gas Department.

By a Good Majority, the Skegness Town Council at their meeting on June 26 rejected a recommendation of the Gas Committee that the gas showrooms in Lumley Square should be closed for the duration of the war. Presenting full details in a report, the Gas Engineer said he was astonished at the Gas Committee making such a recommendation on the grounds of economy. In his opinion there was no justification whatever for closing the showrooms.

Lady Francis Osborne declared open a demonstration of the Food Campaign in the showrooms of the Berwick and Tweedmouth Gaslight Company at Bridge Street, Berwick, on June 26. She was introduced by the Mayor, Councillor J. Macnab. Councillor Mrs. Adams, in proposing a vote of thanks to Lady Francis, also included the Mayor and the Berwick and Tweedmouth Gaslight Company for the use of their premises and appliances. Three demonstrations were given on June 26 and 27.

About a Quarter of a Million Gas Appliances are connected to the Manchester Corporation gas mains. Those owned by the Corporation, including current hire purchase sales, are: 160,944 cookers (a drop of 2,228 during the year); grillers, 16,919; fires, radiators, &c., 20,094 (drop of 1,101); wash-boilers, 25,845 (increase of 588). To these figures must be added the following outright sales (including matured hire purchase sales): Cookers, 26,060 (increase of 3,865); fires, radiators, &c., 28,183 (increase of 2,069); wash-boilers, geysers, &c., 7,865 (increase of 1,590); lighting fittings, 47,129 (increase of 443).

A Reduction in the Price of Gas by 4d. per 1,000 cu.ft. is announced at Dundee. The annual accounts of the Corporation Gas Department show a surplus of £13,500. The price of gas was increased after the war started by 8d. per 1,000 cu.ft., and the war increase is therefore to be halved. At present the price ranges from 2s. 10d. to 3s. 10d. per thousand. The revenue from the sale of gas for the year ended May 15 was £241,548—a reduction of about £8,000, compared with the previous year. But about 200 million fewer cu.ft. was made in the past year. The revenue from the sale of residual products, however, increased from £86,624 to £89,800.

It is Intended by the Kidsgrove Gaslight Company to make application to the Board of Trade for a Special Order under the Gas Undertakings Acts, 1920-1934, to enable the transfer to the Company of the gas undertaking of the Biddulph Urban District Council. The Order would also empower the Company to make agreements with reference to the purchase of gas in bulk from the Birchenwood Coal and Coke Co., Ltd., and to lay the necessary mains to carry the supply. The Kidsgrove Company is one of the Gas Consolidation group whose area is adjacent to that of the Biddulph undertaking. According to the latest returns, the latter undertaking supplies some 1,800 consumers and has an output of about 17 millions.

Coke Supplies Officer

Mines Department Appointment

The Secretary for Mines announces that he has appointed Mr. Leslie O'Connor, of the Interim Committee of the British Hard Coke Association, to be Coke Supplies Officer. Mr. O'Connor will be responsible under the direction of the Secretary for Mines for the control of hard coke, and will carry out certain functions hitherto exercised by the Coal Supplies Officers in this respect.

The address of the Coke Supplies Officer is 11, Pall Mall, London, S.W.1.

Advisory Committee on Benzole Recovery

The Mines Department has already made it clear that the maximum production of benzole of all qualities is urgently required in the national interest. Much has been done recently to increase the quantity of benzole recovered, but it has been estimated that a considerable further quantity of crude benzole might reasonably be recovered at gas-works and coke ovens by the following means: (a) Increasing the efficiency of existing recovery equipment at gas-works and coke ovens; (b) expediting the installation of equipment already on order; (c) the installation of recovery equipment at certain gas-works which do not at present recover benzole.

The Secretary for Mines, acting upon the recommendation of the Committee on High Temperature Carbonization, has now set up a Committee with the following membership: Mr. George Evetts (Chairman), Mr. E. V. Evans, O.B.E., Mr. D. M. Henshaw, Dr. H. Hollings, Mr. D. M. Macdonald, Mr. A. H. Middleton, Mr. J. F. Ronca, O.B.E., Mr. A. W. Smith, Mr. J. A. Beckett (Secretary).

The Committee's terms of reference are: "To advise and assist as to the steps to be taken under war conditions to increase the quantity of crude benzole recovered at gas-works and coke ovens and the yields of products obtained by the refining of the crude benzole."

The Committee has already started on its task, and the Secretary for Mines appeals to all those concerned to co-operate to the full with Mr. Evetts and his colleagues in their work, the success of which must in large measure depend upon the goodwill of the gas and coke oven industries.

The Committee will be glad to give assistance and advice to any undertakings which care to get in touch with them. Communications should be addressed to the Secretary, Advisory Committee on Benzole Recovery, Mines Department, Dean Stanley Street, Millbank, S.W.1.

Gas Supply in South Africa

Mr. J. H. Goldsmith Urges Greater Development

His many friends in this country will be interested to learn that Mr. J. H. Goldsmith, who took up the appointment a few years ago of Engineer and General Manager of the South African Lighting Association, has been elected President of the Eastern Province Engineering and Scientific Association of South Africa.

At the Annual General Meeting of the Association recently Mr. Goldsmith presented his Presidential Address, in which he traced the progress of the Gas Industry from its earliest stages and went on to refer to the question of developing the supply of gas in the Union.

South Africa, he observed, is very poorly supplied with gas-works, there being only four in the country. As a comparison, New Zealand, with a smaller European population, has over 40 gas-works, while Australia, with a population of nearly four times that of South Africa, has over a hundred works. These examples show the necessity for gas supply in a modern community.

One cannot help thinking that with the industrial development of the country the Gas Industry will also develop. Mr. Goldsmith urged the formation of a gas supply corporation to deal with the whole of the Union, and under its direction would come the formation of gas-works at Durban, East London, Bloemfontein, and other large towns. This would be the start of its activities, and eventually every town of, say, 5,000 inhabitants or over would have its gas supply. The control of these small gas-works would be directed from a central organization, and in each area there would be a chemical works where the tar and ammonia from the surrounding works would be handled. These chemical works would be designed to deal with the by-products of the gas-works and to supply the community with specially prepared tar for road work, timber preservatives, benzole, ammonia, fertilizers, &c.

Think what a scheme such as this, when brought to fruition, would mean to a growing country like theirs, said Mr. Goldsmith. It would mean that one of their greatest mineral assets, coal, would be used in the most economical and scientific manner—not just burnt, producing only smoke and ashes as by-products, but supplying gas, coke, and very many important products which are now imported into the country in considerable quantities.

Specification for Stirrup Pumps

This Specification gives a precise description of the performance of the stirrup pump and gives a method of test for the spray which will ensure that, when the spray is directed on to an incendiary bomb in order to accelerate its rate of burning, no appreciable scattering of the burning material will result.

Copies of this specification BS/ARP/33, may be had from the British Standards Institution, 28, Victoria Street, S.W.1, price 4d. post free.

Institution of Gas Engineers

The Ballot for election to membership of The Institution of Gas Engineers of Members, Associate Members, and Associates on the accompanying Ballot List was announced at the Meeting of the Council of the Institution, held yesterday.

To Membership (4)

Brown, John Joseph, Chemist, Liverpool Gas Company.

Derbyshire, John Aspinall, Engineer and Manager, Gainsborough Urban District Council, Gas Department.

Terrace, David Edward, Superintendent, Linacre Gas Works, Liverpool Gas Company.

Topley, Alec Frederick, Engineer, Woodall-Duckham Company.

To Associate Membership (33)

Anderson, Alfred George Isherwood, A.M.I.Chem.E., General Manager and Secretary, Shotley Bridge and Consett District Gas Company.

Ashton, John Henry Francis, Technical Assistant, Harrogate Gas Company.

Bursey, Robert Randolph Henry, Technical Assistant, Leamington Priors Gas Company.

Derbyshire, Kenneth, Assistant Gas Manager, Bangor Borough Council Gas Department.

Gaskarth, John, B.Sc., Chemist, Liverpool Gas Company.

Gilden, George, Technical Assistant Engineer, Hampton Court Gas Company.

Green, James Hardman, Technical Assistant, Barnoldswick Urban District Council Gas Department.

Greenway, Norman Huntley, Assistant Industrial Engineer, Cardiff Gas Light and Coke Company.

Hedges, Arthur Francis, Assistant Public Lighting Inspector, Gas Light and Coke Company.

Hemingway, Charles Wilfred, Second Assistant Engineer, Plymouth Corporation Gas Department.

Henderson, William Myles, Engineer and Manager, Dalkeith Gas Light Company, Ltd.

Higginson, Kenneth, B.Sc., Senior Operator, Woodall-Duckham Company.

Holland, James, Chief Draughtsman, County Borough of Stockport Gas Department.

Hudson, Ronald Augustus, M.Sc., Assistant Engineer, Gas Light and Coke Company.

Ireland, Norman William, Industrial Representative, Tottenham and District Gas Company.

Jennings, George Peter, Assistant Works Engineer, York Gas Company.

Jones, Richard, Senior Technical Assistant, Rhyl Urban District Council Gas Department.

King, Sidney Albert, Industrial Sales Superintendent, Tottenham and District Gas Company.

Lee, Philip Norman, Technical Assistant and Senior Chemist, Hartlepool Gas and Water Company.

Matthews, Norman, B.Sc., Chemist and Technical Assistant, Bolton Corporation Gas Department.

Millington, Herbert, Chief Chemist, Mossley and Saddleworth Gas Company, Ltd.

Mitchell, William Porter, Technical Assistant, Burgh of Motherwell and Wishaw Gas Department.

O'Mahony, Jeremiah John, B.E., Assistant Distribution Engineer, Cork Gas Consumers Company.

Price, Laurence Philip, Carbonizing Superintendent, Plymouth and Stonehouse Gas Light and Coke Company.

Proud, Robert, Chief Chemist, Hartlepool Gas and Water Company.

Riches, Norman Frederick, Technical Assistant, East Grinstead Gas and Water Company.

Robertson, Thomas, Junior Technical Assistant, St. Andrews Gas Company, Ltd.

Ross, Theodore Anderson, Technical Assistant, Buckhaven and Leven Gas Commissioners.

Stevenson, Bernard Stanley, B.Sc., A.R.C.S., Technical Assistant, Primitiva Gas Company of Buenos Aires, Ltd.

Tarratt, Ronald Leslie, B.Sc., Engineer, West's Gas Improvement Company, Ltd.

Voice, Ernest Wallace, B.Sc., Chemist, Gas Light and Coke Company.

Warrick, John Philip, Industrial Sales Representative, Gas Light and Coke Company.

Webster, Frederick James, Works Manager, Hartlepool Gas and Water Company.

To Associateship (3)

Edgar, William Ronald, Managing Director and Chairman, William Edgar & Son, Ltd.

Tilley, William Henry, Director, Peebles and Company, Ltd.

Toop, Alfred James, Sales Supervisor, Gas Light and Coke Company.

"Save Waste" Appeal on Gas Accounts

A suggestion that "save your waste" appeals should be overprinted on all rate demand notices has been made by Mr. H. G. Judd, Controller of Salvage to the Ministry of Supply.

"Rate demand notices will be sent to hundreds of thousands of homes within the next few weeks," said Mr. Judd. "It would be of really practical value if local councils would overprint on them a message to housewives reminding them of the urgent need to save paper, bones, scrap metal, and other raw materials. Gas and electricity undertakings could also give valuable help by including similar appeals with their demand notes. Their action in this matter would be greatly appreciated."

The Gas Industry, with its exceptional facilities for contacting women in their homes, can be of special use by co-operating in the manner suggested by Mr. Judd. It is felt that municipal undertakings particularly may be able to co-operate with the appropriate departments concerned with salvage and give practical assistance in this way.

Women's Gas Council

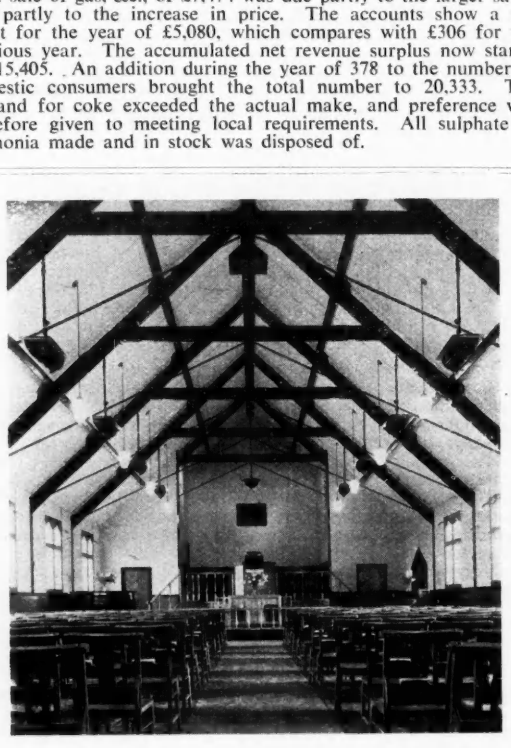
On Wednesday, June 26, Miss A. M. S. Wilson, B.Sc., of the Women's Gas Council, spoke at a meeting of the Ashstead Branch of the Epsom Division Constitutional Association. Mrs. Francis Jackson was in the chair. The meeting was held, by kind invitation of Mrs. Maple, in the beautiful garden of Murrey's Court.

The day before Miss Wilson had spoken on "Food in Wartime" to the Chalk and Denton Branch of the Gravesend Constitutional Association, and on Thursday, June 27, she addressed a crowded meeting of the West Ham Women's Gas Council, on the same subject.

In spite of increasing calls upon everybody's time and disturbed nights, these meetings were packed and the audiences showed appreciative interest in the speeches.

Increased Sales at Lincoln

An increase of approximately 4% in the production of gas during the year ended March 31, as compared with the preceding twelve months, is reported by the City of Lincoln Gas Department; the actual output being 869,074,000 cu.ft. Gas charges were increased 3d. per 1,000 cu.ft. from Jan. 1. An increased income from sale of gas, &c., of £7,474 was due partly to the larger sales, and partly to the increase in price. The accounts show a net profit for the year of £5,080, which compares with £306 for the previous year. The accumulated net revenue surplus now stands at £15,405. An addition during the year of 378 to the number of domestic consumers brought the total number to 20,333. The demand for coke exceeded the actual make, and preference was therefore given to meeting local requirements. All sulphate of ammonia made and in stock was disposed of.



Our photograph shows an interesting gas heating installation recently completed in the new Bethel Church at Coventry. The scheme comprises 10 Bratt Colbran "wedge" pattern overhead radiant heaters in the body of the church and one "bowl" type heater over the pulpit. Each individual heater is independently controlled by a "Newbridge" positive switch

INSTITUTION OF GAS ENGINEERS

Authors' Replies to the Written Discussion ("JOURNAL" of June 26) on the June Institution Papers

Communication No. 230

T. R. COOK

The Author, in reply, wrote: I agree that the three main factors commented on by Mr. Johnston are of vital importance in the general scheming of a new Works, in conjunction with the many other influences which are peculiar to different Undertakings. My colleagues and I feel that we have a carbonizing plant which will satisfy completely the requirements of our particular load coupled with the installation of a modern C.W.G. plant, and we feel that it is quite justifiable to limit the size of the retort house of the gas producing plant necessary to carry on for 20 to 25 years, based on the previous increases in output over a period of years. We have naturally estimated that the peak weekly load will still occur during the month of August, and it would be practicable to increase the production of C.W.G., which would carry the period of the Works capacity for a further period of years. As it is not possible to forecast correctly the general trend of gas production during the next twenty years, my fears would be that the capital cost involved on the carbonizing installation might not be justified owing to a complete change in the future methods of gas production for town use.

Mr. Johnston will remember innumerable preliminary schemes which were drafted out in connexion with these Works over a period of years, and we have not deviated in any way from our policy of having an adequate area of land for the extension of works plant on the site, so that when the time arrives to carry out extensions it should be practicable to obtain the most economical lay-out of new plant required. However, the works gas making and ancillary plant should be debt free at the expiration of the period mentioned.

With regard to the second stage of the scheme, a period of two years was allowed in which to hand over the East Works site to the Railway Company, which entailed the demolition of a 1½-mill. cu.ft. gasholder which is constructed in a brick tank. This gasholder has served its useful life, and could not be moved economically and rebuilt in a steel tank above ground or a brick tank. Therefore it was decided to erect a new gasholder on a new site to compensate for the loss of storage accommodation. It is intended to retain storage accommodation at Princess Street, which can be used very effectively as a distribution centre until some finality has been reached as to the policy of the complete removal of the whole of the Works. On this very important question the financial aspect must be seriously considered, which would involve the removal and rebuilding of two gasholders in new tanks at the new Works. I agree with Mr. Johnston that if the gasholders are in good condition no great difficulties present themselves in the taking down and re-erecting of gasholders of any capacity.

With regard to the stocking and reclaiming of coal, this has been well taken care of in the provision of ample stocking ground and railway siding accommodation. There is no difficulty in stocking up to 30,000 tons on the site, which can be handled conveniently by a steam grab travelling crane which will carry out both unloading and loading of wagons as required in the future.

Careful consideration was given to steam-raising plant required and due regard exercised in the choice of either three waste-heat boilers or three "Dry-back" boilers, both of which had particular advantages. In our waste-heat boiler plant we are anticipating that except in real emergencies all steam requirements will be met by these boilers, utilizing waste heat and auxiliary heat from the producer gas. The periods in which waste-heat boilers are out of action through repairs, boiler, cleaning, inspection, &c., are considerable over a period of years, and a great number of spares of all types must remain in the stores until required.

Waste-heat boilers can be brought into action by a system of reliable dampers in a very short period of time, and we consider it advisable to have an additional waste-heat boiler which could be quickly changed over in case of emergency, which would enable us to obtain better control of the settings and avoid changing over and relying on the pull from a comparatively short chimney.

If, in the future, additional steam-raising plant is required, provision has been made to install the third "Dry-back" boiler without disturbing any of the boiler house brickwork.

I consider that, although for a short time capital expenditure might safely have been curtailed on steam-raising plant, it was more prudent to take the boldest course and install all plant which might be required over a period of years. In the construction of a new Works, it is better, in my opinion, to avoid supplementary estimates which create difficulties after applying for a loan, and engineers of Municipal Gas Undertakings will appreciate this fact. It is estimated that the exhaust steam from the generator engines at 25 lb. per sq.in. will not be sufficient at all times for the steaming of retorts, concentrated ammonia plant, and benzole plant, and arrangements have been made for make-up steam from the high pressure steam range to be supplied through suitable reducing valves. The exhaust steam from all engines was carefully estimated, and it is anticipated that practically all the exhaust steam will be utilized for process work in addition to the heating of water and buildings, and for the evaporation of water from the tar in a separate loading tank before it is conveyed to the distillery.

Communication No. 231

D. M. HENSHAW and C. COOPER

The Authors, in reply, wrote: Mr. Parrish's contribution has been carefully considered, and the following further remarks are offered.

It is possible to design a gas condensing system with such a low resistance to gas flow that the question of power consumption representing the pressure drop is negligible compared with the benefits of high cooling efficiency. We think this statement would be confirmed by most designers of such plant.

Mr. Parrish's further point regarding the necessity of considering the cooling water is very important; so important, indeed, that it would be, in itself, a sufficiently large and interesting subject for a Paper. Such a Paper would deal with the treatment of industrial waters in accordance with their composition, and the constructional materials best used in various cases, the provision of preheated boiler feed, and many other related matters.

Mr. Parrish's remarks about the economics of tar extraction can be met by pointing out that several Livesey washers in series would be required to substitute a single electrical precipitation apparatus, from the point of view of efficiency of tar removal. When it is considered that, on medium and large sizes, the modern tar precipitator is economical even as compared with a single Livesey washer, it is clear that the electrostatic precipitator has the advantage.

With regard to the manufacture of concentrated liquor as affording a solution for the by-product ammonia problem, the Authors state that it is not a complete solution for all undertakings. For example, the local distillation of ammonia leaves an effluent with a toxicity not greatly reduced as compared with that of the crude liquor itself, in respect of phenolic content, &c., the discharge of which may in some localities be prohibited. Nevertheless, Mr. Parrish's remarks on the Public Health (Drainage of Trade Premises) Act, 1937, are of real interest, and the Act itself should be carefully considered.

Mr. Parrish has added further remarks on the manufacture of fertilizers and the possibility of recovery of raw materials for the plastic industry which are themselves of great interest.

The Authors are glad to note the support they have received from Mr. Parrish and others for their advocacy of the completest possible benzole extraction, and the advantages accruing therefrom. The remarks Mr. Parrish has offered on the subject of the gross revenue available are, however, already passing out of date, as have many of the observations made by the Authors themselves since the Paper was written.

Communication No. 232

J. T. HAYNES

Mr. James Carr (Stretford) wrote: I am very sorry that this interesting and valuable Paper has had to be presented to us in times which hardly permit of detailed study and examination. Nevertheless, it is a Communication that ought to be retained carefully for close study when normal times return.

When meters are supplied to an undertaking the Law allows 2% fast and 3% slow in registration. It has been proved by test that unlubricated meters tend to record against the Gas

Undertaking after being in service for some time and, as pointed out by the Author, as the pressure absorption increases so also does the degree of accuracy of registration. For every 1% slow on all domestic consumers' meters, this amounts, in the case of Stretford, to £900 per annum. To this amount must be added a proportion of the change meter charges, which amounted to £828 last year. These change meter charges are made up as follows:

	Total, £.	Pence per meter.
Labour and materials	244	12.7227
Transport repairs	24	1.2726
Running costs	76	3.9468
Drivers' wages	439	22.8847
Clothing	10	0.5054
Licence	35	1.8421
	£828	43.1743

To ascertain the effect of lubrication *in situ* the following tests were carried out:

> Four meters, each of 100 cu.ft. capacity, were connected in parallel to a 2 in. diameter service pipe, the gas pressure in which was governed to 3 in. w.g. A wadding filter to eliminate solid deposits and gum, was fitted before the first meter in the 2 in. service pipe. Each meter was adjusted to pass 40 cu.ft. of gas per hr. and pressure absorption was checked in each case.

The results were as follows:

No. 1	19.0/100 in. w.g.
No. 2	22.0/100 „ „
No. 3	17.5/100 „ „
No. 4	22.5/100 „ „

Three of the four meters were then lubricated, No. 1 with machine oil, No. 2 with castor oil, and No. 4 with solar distillate. No. 3 was left dry. The pressure absorption figures were again checked, the readings being:

No. 1	16.5/100 in. w.g.
No. 2	23.0/100 „ „
No. 3	17.5/100 „ „
No. 4	19.5/100 „ „

Over a period of some 50 days, pressure absorption figures were checked at frequent intervals. By this time each meter had passed some 57,000 cu.ft. of gas. The results were graphed and showed that whereas Nos. 1 and 4 fell immediately on oiling, No. 3, which was unlubricated, rose sharply. No. 2 rose slightly on lubrication but fell steadily afterwards. It may be argued that the tests are isolated instances with each type of lubricant, but the conclusions arrived at are interesting.

The Author infers from Figure 3 of his Paper that a dry meter (unlubricated) is better than an initially lubricated meter operating on clean gas of consistent quality. In the Stretford Undertaking, however, our conclusion is that until we achieve the ideal in clean and consistent quality gas we prefer a meter lubricated intermittently rather than one with no lubrication at all. The continuously lubricated meter is the ideal but little has been done in this line up to the present, especially with small types.

The wadding filter, after passing some 220,000 cu.ft. of gas, was light brown in appearance and smelt strongly of pyridine. It gave every indication of having been most efficient in absorbing the gum, and I am certain the figures and results obtained from the four test meters would have been very different if the gas had not been passed through wadding.

Prior to the war, I had in mind a scheme of district meter lubrication to be carried out by the meter readers, and it was intended to try to lubricate every meter on the district at least once each year. This scheme would include all meters, even those still under the five years' guarantee from the manufacturers, because the cost of changing all meters still has to be borne by the Gas Undertakings, whether the meter is under its five years' guarantee or not.

The Author's Reply.

The Author, in reply, wrote: It is generally accepted that the small number of written contributions to the Discussion on the various Papers recently presented to the Institution is a measure of the intensity of our war-effort, and is not due to any lack of interest in technical matters concerning the Gas Industry.

Mr. Currier has energy sufficient to maintain his progressive activities in both spheres, but I challenge his statement that the old "lights" type of meter would stand overload better than the modern high capacity meter. It is not like Mr. Currier to sigh for the "good old days," and certainly any attempt to restrict meter capacity by means of a volumetric governor would quickly lead to complaints from consumers.

Mr. Currier expressed the feelings of many of his brother engineers when he put forward the case for standardization at the British Industries Fair last year, but I suggest that standardization must be effected by the elimination of obsolete patterns and not by the stifling of competitive ingenuity. Any standard, whether of design or performance, must not be allowed to remain stationary; it should be improved from time to time by the adoption of such technical developments as may be agreed upon by an authoritative body of the Industry. The advantage of any departure from the accepted standard would quickly find its own economic value as an "extra."

It is encouraging to observe that other workers are forming the opinion that the "gumminess" of gas meter slide valves is not always due to gum in the gas. While it is appreciated that the application of a lubricant does in many cases correct a faulty meter, I do assert that lubrication is a preventative rather than a cure, and therefore lubrication, if it is to be applied at all, must be maintained. How far design can avoid the necessity for lubrication altogether is a subject for investigation.

Whether or not such investigation is a matter for the Meters Committee of The Institution of Gas Engineers, representing both makers and users, or a matter to be referred to the manufacturers in the first case and then to the Institution for testing and investigation, as suggested by Mr Terrace, is not within the scope of the Paper.

Mr. Carr also has considered the necessity of renewing the lubricant in domestic meters on the district, and has generously kept me informed of the progress of his tests. It is noted that his published details of results vary slightly from those obtained in our own tests, but the conclusions drawn are substantially the same. Mr. Carr rightly considers the problem to be one of economics and is satisfied that periodic lubrication is technically and commercially advisable under present conditions of gas manufacture. One would like to know the results of an examination of the filter pad used in his tests!

Since the Paper was written, I have been responsible for further experiments and have had conversations with a number of other gas engineers. In paying tribute to all those who have given me encouragement and assistance, I am more convinced than ever that the appropriate technical committee of the Institution, as well as the manufacturers, should take a much greater interest in:

(i) Achieving a measure of standardization.
(ii) Avoiding the over-loading of meters in service.
(iii) The problem of lubrication.

Communication No. 233

H. H. THOMAS and P. J. ASKEY

The Authors, in reply, wrote: Mr. Currier is correct in concluding that the economic success of the scheme is dependent upon the development and retention of a domestic market. The experience already gained with "Dryco" indicates that the market is available, and careful control of coke quality will enable it to be retained and developed. By proper selection of coal, it is possible to ensure that the ash content will be maintained at a reasonable figure after the addition of alkali: the ash density also can be controlled in this way. This latter factor determines the appearance of the burning fuel, and it is equally as important as the combustibility and accurate size grading in the maintenance of sales.

The figures for breeze produced (Table 8) have given the impression that the breeze was doubled. This was not so. The figures in Col. 2 refer to the production and sale of forked coke only, and 10 per cent. breeze is the quantity produced in these circumstances. The figures in Col. 3 include the breeze formed by crushing and screening; 20 per cent. is a normal figure for breeze production due to crushing. The practice of maintaining stocks of the activated fuel has not been adopted, and breeze production and the effect of weathering have not been studied. It was not considered necessary to maintain stocks, because the output of the fuel can be varied to the limit of the carbonizing capacity.

It is generally considered that the method of adding alkali to the coal prior to carbonization would cause rapid deterioration of the refractory material. The experiment was made to determine whether or not this was correct. The ultimate expression of opinion upon the condition of the refractories must be left with the Refractory Materials Joint Committee. It is permissible to state at this stage, however, that superficial examination indicated very little difference in condition between retorts used with and without alkali. The control of carbonizing conditions is not greater than should normally be exercised to ensure efficient gas making results and proper

care of the plant. There is no reason why gas production costs of the same order as those shown in Table 8 should not be attained by other Gas Undertakings.

The existence of a large potential domestic market cannot be disputed, and it will only be developed by the production of coke of particular and consistent quality. When this quality is achieved, the extent to which it will be necessary to carbonize coal cannot be foreseen, but it will be far greater than the output of carbonized fuels at the present time.

The producer fuel used for heating the retorts contained approximately 10 per cent. alkali activated breeze. The activated coke was not used for this purpose because it was considered unnecessary to incur the expense of alkali addition to fuel which was to be so used. There was no noticeable effect upon the producers or the flues, but the final opinion upon this matter also will be expressed by the Refractory Materials Joint Committee.

It has been assumed that the small loss of alkali noted has been carried forward with the gas. The water content of the tar has not been found to be excessive, and it does not seem probable that small particles of lime would increase the water-retaining property to a greater extent than the carbon particles already present.

WAVERLEY ASSOCIATION OF GAS MANAGERS

Presidential Address

of

A. S. NISBET, M.Inst.Gas E.,

late Engineer and Manager of the Paisley Gas Department

Annual Meeting at Edinburgh, Friday, June 28

(*Concluded from page 24 of last week's "JOURNAL"*)

When an engineering undertaking was considering the rival claims of electricity, oil, producer gas, and town gas for heat treatment, I was told that if I could supply 20 million cu.ft. per annum for £2,000, both electricity and oil would be removed from the competition. The cost on the existing scale was £1,750, and although later, in 1937 and again in 1938, I found it necessary to increase the price of gas, I added such downward steps in the industrial rates as would still give the supply at £250 under the required figure. I did not get the business. As a result of outside expert advice, producer gas was adopted, to—I hope and believe—the considerable inconvenience and disadvantage of the purchaser.

First Drop Must Be Steep

One mistake I did make was to try to induce increased domestic consumption by a reduction of 1d. per 1,000 cu.ft. when the consumption passed 25,000 cu.ft., and a further 1d. when it passed 50,000 cu.ft., in any year; but that was money thrown away, although before offering the reduction I had sought advice of a friend with whom penny steps had been successful. Generally, the drop after a qualifying quantity must be steep, and a suitable opportunity may therefore present itself when these troublous days are overpast, by retaining as primary rate that to which present-day costs are operating and then stepping down sharply to a secondary rate capable of further reduction as consumption is increased. So I return to my proposition that each man must devise his tariff for his own undertaking.

But before leaving this subject, I would comment upon the great difficulty in devising a suitable and fair gas tariff which may combat the often unfair and unequal terms under which its great rival electricity is offered to the heat consuming public. It has long been a claim of the Gas Industry that the flexibility of its manufacture and storage plant combined gave it a tremendous advantage over electricity which must be generated to meet the demand of the particular moment. But that very flexibility has been a deterrent to tariffs, in that it has confirmed us in the policy of supply at a level rate irrespective of volume of consumption. We have prided ourselves that our equipment enables us to be prepared for any demand at any time, and our only need has been sufficient manufacturing plant to meet seasonal change. Even that we regarded as an advantage, since provision of plant for winter manufacture ensured ample time for repairs in the summer months. This particular advantage has, in recent years, been less marked, and it will gradually decline as the lighting load becomes a progressively smaller percentage of our output.

When electricity was first introduced its use was principally for lighting. It proved so convenient a source of illumination that it attracted practically all who could afford so to employ it. But the generating plant was idle during the hours of daylight, and so an offer at lower rates was made for its use during that period. That, I think, was the genesis of tariffs, and I invite you to consider how far fair use has been made of their power in giving the benefit of improved methods of generation and distribution to all its classes of consumers. Once again, I refer to my Paisley experience. You may recall that about 1924 the Government of the day was desperately anxious to meet the growing menace of unemployment and as a measure to counteract its evil influence invited municipalities to embark on development or extension work with the promise of financial aid for approved schemes.

At that time only the two main avenues of the town, north to south and east to west, were electrically lighted, and the Town Council seized the opportunity to suggest conversion to electric lighting of the streets of one complete district of the town. The Government department concerned hailed this proposal with joy and said in effect—"Why only one district? Do the whole town, and you may have 75 per cent. of the interest and sinking fund charges for half the period of the loan (25 years)." Acceptance allowed of the cabling for street lighting purposes of every street and alley in the town and provided, I believe, the most complete municipal installation at that time in the country. Immediately the cabling was completed the system was applied to stair lighting, thus depriving the gas undertaking of an annual consumption of 40 million cu.ft.

Aggravating Unemployment

Now, I am not going to belittle what one must at once admit was a tremendous convenience. By a single movement street and stair lamps were lighted and similarly extinguished, and tenants were thus freed from a source of frequent irritation and quarrel. What I do critizise is Government favour which provided work for already fully occupied cable and electrical equipment makers nowhere near Paisley, and by that act and under the guise of alleviating unemployment, potentially aggravated that very evil in Paisley by depriving a local undertaking of 7 per cent. of its load. Fortunately, the gas output at Paisley did not decline, other outlets being developed; but the progress of the undertaking was psychologically hindered, the effect of stair lighting being such that the gas lighting load was lost much more rapidly than in other towns. Further, Paisley was so frequently described locally as "the best lighted town in Scotland" that people, other than motorists, began to believe the claim, which is being rather discounted to-day by a complete change in the type of lamp employed.

I have always thought that any revenue producing undertaking should finance its extension from its own earnings. Government assistance of the kind I have named is simply subsidy. It is unsound in principle and grossly unfair in practice, since company undertakings are debarred from participation in benefit to which by taxation they subscribe, and in the end these "9d. for 4d." eleemosynary schemes do often prove to be "4d. for 9d." ones, because of their restriction in the matter of often unsatisfactory local labour employment.

This long digression serves to introduce what I consider an unfair type of tariff. Secure in the lighting and power loads the Electricity Department has offered these terms for domestic consumption—

(a) In a two-apartment house an annual payment of £6 gave 1,440 units of current, plus a radiator, a kettle and a cooker. Any current in excess of 1,440 units to be charged ½d. per unit, amended now (as the radiator evidently was not appreciated) to—

(b) £4 10s. annually for 1,080 units, plus kettle and cooker. Any current in excess of 1,080 units to be charged ½d. per unit.

That is, the charge for all domestic purposes including lighting cannot exceed 1d. per unit. It is probably less, and the kettle and cooker are free. When it is remembered that some of the cooking must synchronize with the peak load one exclaims with the mystified patron of the conjuror "Marvellous! How does he do it?" The answer is "by overcharging the ordinary lighting and smaller power consumer." The terms would not stand actuarial examination, and sufficient business of this kind would ruin an undertaking. It is fairly certain that if a company so well managed as the Clyde Valley Electrical Power Company, Ltd., cannot supply cookers either free or on simple hire, no municipal undertaking can do so. And it is this subsidized competition which the Paisley Corporation Gas Department has had to face for years after providing £34,000 out of its own profits—that is, out of the price of gas—to keep its rival in being.

I quote from a correspondent of the *Glasgow Herald*—Scotland's leading newspaper despite the rival claim exhibited in each railway station between Queen Street and Waverley—a similar misuse of tariff power or opportunity. A Glasgow shopkeeper paid for 8,425 units of electricity £76 13s. 7d. A residential consumer, occupying a fair sized house and using the same amount of current, would have been charged £10 2s. 6d. The Gas Industry, I am sure, will never adopt or approve such unequal treatment of consumers of equal quantity.

Compensating Advantages

And now, having considered some of the perplexities which beset the Manager of to-day, what compensating advantages has the progress of science and rationalization brought to his aid? I think there is quite general agreement that mechanization of the process of manufacture has simplified the daily routine of the gas manager. Carbonization, in which process the coal needs little human aid in its course from the point of delivery to the deposit of its residual coke in storage bunkers; increase of gas yields due to steaming of the charge; accurate exhausting, the result of expert design and governing; tar precipitation; mechanical handling of purifying material; the replacement of lime (unsaleable when spent) by oxide of iron which has some residual value; the employment of breeze in suitable grates for steam raising—all these ease the anxiety of the executive officer, not only because of their labour-saving economies, but also because they call for the employment of skilled workmen capable of accepting responsibility and applying a trained intelligence to the task in hand.

In rationalization, readjustment of agencies—to employ an ecclesiastical phrase—and the use of coke oven gas have resulted in closing many small manufacturing stations, and, however much we may sentimentally regret their reduction of status to distributing centres, there can be no doubt that holding companies, by their control in management, manufacture, and marketing, are maintaining remunerative supply in districts which but for their absorption in the larger scheme of supply would have come to be hopeless for the continued operation of small individual concerns. You remember that only a few years ago there was considerable interest in the provision of a gas grid for the West of Scotland, to be fed partly from coke ovens and partly from existing gas undertakings. To-day there is a prospect that one source of coke oven supply will find absorption in the city within whose boundary it is produced. The grid proposal may therefore be revived, and, if so, the committee in charge of its examination will almost certainly have wide powers, since public opinion will no longer tolerate the burning to waste of useful gas. Then, our Industry must guard against the inequalities of the earlier scheme, the principal of which I recall as:

(1) The guarantee of full absorption of the coke oven gas.
(2) The consequent uneconomic maintenance of staff and plant by gas-works for the production of small and varying outputs as required to supplement the coke oven delivery.
(3) The indication of price at which gas must be sold to secure industrial load while yet the price to be paid by gas undertakings to the coke oven interests was undefined.

One must always remember in the discussion of price that gas is to the coke ovens what coke is to us—a by-product—and as such it can secure only a by-product price, and further, that it is the coke oven gas which seeks a market. Under rationalization also may be classed the excellent co-operative tar selling schemes and the plans for regulating coke prices in home and export markets. I suppose that under a similar heading—but of the coal industry this time—is the scheme for the sale of coal to public utility undertakings whereby the Gas Manager is relieved of all anxiety in the choice or price of his purchase! It used to be a sound business maxim that "he who pays the piper calls the tune"; but in this particular instance the employer of the piper is told, not only which tune he will have, but how much he will pay for it, and he may contribute only a feeble and acquiescent tenor in a rendition to which the rumbling and remonstrative bass of Mr. Jetsom alone could do adequate justice. Is it not the most extraordinary situation that the Industry has so little say in the provision of its raw material each one of whose derivatives it has to market in the face of fiercest competition?

Work of Our National Bodies

I draw to a close by reference to the care of the Industry's interests, and the help afforded to Gas Managers by the Central Institutions, the National Gas Council, the British Commercial Gas Association, and the Federation of Gas Employers. I would like to comment particularly on the work of the last-named. Its formation twenty years ago provided the agency for regulating wages on a national scale. How great a service it so rendered can be appreciated only by those officers who were then constantly faced with fresh demands as soon as the last had been met. It is always easy to criticize in retrospect, but one knows now that, when a wage basis was arranged, insistence should have been laid—always within the provisions of zoning and grading—on equality of remuneration. A wage is payment for work done, and there is no place in its structure for such an anomaly as a "better conditions clause." Indeed, I have always regarded this particular clause as the author of the new technique which selects a works where, for some local reason, there is a favourable rate for certain jobs, and seeks then to have it applied as standard in all works. A Manager is now hindered in rewarding good service in the only way open to him—by fear that in so doing he will raise fresh demands for increased pay all round.

One rather fears that before long the zoning and grading rate will be regarded by what is euphemistically termed "the other side" as only a basis to which addition may be claimed for each process of gas manufacture. I think I am right in saying that every departure from the original scale has been in favour of the workman. Increases have usually been retrospective, reductions never, and there has been the concession of a "two-stage" reduction when the agreed scale decrease would have appeared severe in incidence or amount. This "tempering of the wind to the shorn lamb" is in part at least one of the consequences of the last change of this half-century to which I shall refer—the change in the composition of the boards under which we serve.

Forty years ago, and even later, election to town or county councils was the reward for appreciated individualism. Men were called to these boards because they were distinguished in business, philanthropy, or learning, or were naturally by birth and position leaders of the community in which they lived. But, and particularly since payment has been made for Parliamentary representation—incidentally, Members of Parliament appear to be the only people who can give themselves increases of salary, and a recent 50 per cent. increment is sound tribute to that power—there has been extraordinary growth in the professionalizing of representation generally, and now many men of undoubted ability and unquestioned integrity find themselves elected to public boards on what Americans call a "ticket." They are, whether they quite recognize it or not, pledged to a particular course of action which, favourable to a section of the community, is not necessarily in the interests of the whole.

Exercise of Expediency

An outstanding instance of this is found in the pressure which tenants' associations in housing schemes bring to bear on public men, resulting in their exercise of expediency rather than of conviction, and of class legislation of the most objectionable type. One wonders what will be the labour position when this war is over. At present, all industry is sheltered and so on some equal recognition of worth. But when once again our manufacture by whose export we live has to compete for absorption in the world's market, will the Government which nowadays interferes so readily in every enterprise be able to correlate sheltered and unsheltered wages and so prevent the gross injustice of the last post-war period in which the skilled craftsman had actually less return for his labour than that given to the commonest unskilled effort for whose performance only an age qualification was essential?

We have learned much since 1914-1922. Will it be possible to apply our added knowledge to the labour problems which the next post-war period will bring?

Well, what is the "conclusion of the whole matter?" I began by inviting your consideration of the changes of the last 40-50 years in practice and outlook in our Industry. Have these changes been for the better so far as the Gas Manager is concerned, or were "the former days better than these?" There will not be any general agreement. Opinion will be guided by one's age, length of service, degree of success, position in the Industry, and many other considerations. I say, unhesitatingly, that a Manager was better off 40 years ago than he is to-day. Then he was pretty much his own master. Like the redoubtable Captain Kettle—"If he was going to be a King then, by James he'd carry a full King's ticket." He had his straightforward job to do—make and sell gas. He could develop to the full in his works his power of initiative and individuality, and, above all, he had an open and assured market. To-day he sells his product in sternest competition with several rivals; he is hedged round by new regulations and restrictions. In many ways he is the administrator of other people's enactments—these not always above criticism—and he has to carry on in a much "fiercer white light than that which beats upon a throne"—knowing that his every action in the conduct of his undertaking is matter for observation and comment (usually unfavourable) in some quarter.

A Clamant Call

So there is clamant call that you—I return to the second person because I have almost finished—you who to-day represent the executive side of the Gas Industry should be even more active, more diligent in the prosecution of its interests, more devoted to its traditions than men of my time have been. You it is who have the task of utilizing to the greatest economic advantage the coal which is Britain's life-blood and so of repeating and extending the contribution which the Industry made to the national need in the Great War. Bring to it your best effort. You can bring nothing more. You need bring nothing less. Only so may you be spared such regret as wrung from one who had failed timeously to recognize that supreme duty of responsibility, the desolate cry—

"Ah! my God,
What might I not have made of thy fair world
Had I but loved the highest creature here?
It was my duty to have loved the highest:
It surely was my profit had I known:
It would have been my pleasure had I seen.
We needs must love the highest when we see it."

Gentlemen, so must you regard your task of public service. See in it opportunity for the highest use of your powers and talents and so make it to-day your best possession and on that morrow, when it is finished, your proudest memory.

DISCUSSION

Mr. **W. C. Campbell** (Galashiels) said that Mr. Nisbet had suggested that a gas manager had often to buy his business so far as housing schemes were concerned by the free supply of equipment. In a town where the speaker had been given the job of supplying gas to a housing scheme the local gas company had to provide mains and cookers, as well as piping in the houses. Yet they had no return for this and no guarantee of future business. One year they undertook an investigation into the consumption in that scheme and they discovered that the returns by no means justified the money expended. They had no guarantee, after installing cookers and other appliances, that the tenants would use them. They found that in no time the electricity canvasser was knocking at their doors, with the result that often there was a serious fall in gas consumption. Galashiels Town Council paid the cost of services to such houses, supplying a substantial cooker and boiler and giving the local gas company all possible help. Yet, in spite of that, the consumption was not what it should be and in many other places the average consumption among housing scheme tenants did not offer a very pleasant picture.

Mr. **Nisbet,** in reply, said that housing schemes were not always such a benefit to the Gas Industry as they were popularly thought to be. They often revealed great inequalities of treatment and showed how little was done for gas.

Mr. **A. C. Rea** (Perth) remarked that he had had a happier experience with housing schemes than either Mr. Nisbet or Mr. Campbell. In Perth, where the gas undertaking was a municipal one, they had expended considerable sums of money on housing schemes and the Housing Department paid everything inside the fence line. So far as equipment was concerned, he found, when he went to Perth, that the Ministry of Health, which had a considerable say in the matter, specified a cooker and wash boiler which were the cheapest that money could buy. After a few years, however, he was successful in getting a recommendation for a better grade of each. It involved the extra expenditure of only a few pounds. They now supplied a semi-enamelled cooker and an enamelled wash boiler and this had proved to be to the advantage of the gas department. Previously the poor quality of boiler had damaged their prestige and some people had reached the stage of installing coal boilers. With a prepayment meter they now found their average consumption was 25,000 cu.ft.

Mr. **R. J. Gavin** (Melrose) said that each of them should frame his own tariff, according to his locality and the needs of his area, for many things had to be taken into account. With regard to coal, he felt that the day was coming when the Gas Industry might require to purchase its own coalfields and work them for the benefit of the Industry.

Mr. **I. M. Hardacre** (Berwick-on-Tweed) said that when he went to Berwick in 1935, he found it was intended to instal wash-boilers into 400 houses and for this purpose the gas company purposed spending £900 on mains. With gas at the price then prevailing, it would have been an unprofitable venture and he asked his directors to hold their hand. They had a hard fight but finally they got one pound for the first hundred houses and ten shillings each for the other three hundred. The Corporation dug the tracks for the mains and did the reinstatement work, while in addition they got a cooker or griller put into each house. The gas company came out of the business fairly well.

Mr. **Sydney Smith** (Paisley) said he was Mr. Nisbet's successor and he felt he must add his word of appreciation. Mr. Nisbet—and this was characteristic of him—had said nothing of his work in Paisley. He had mentioned his difficulties but had made no mention of his successes. Yet in spite of these difficulties he had left the undertaking at Paisley in a sound condition, both financially and mechanically. The accumulated reserve at Paisley was £63,000 and the outstanding loan debt was only £50,000. This gave them some idea of Mr. Nisbet's worth to Paisley. He wished to record his appreciation of his predecessor as a man and as a gas engineer, who had left his undertaking and everything connected with it in such fine order.

Mr. **David Fulton** (Helensburgh) remarked that the Industry was greatly indebted to those men who introduced the policy of supplying free cookers. But for that policy they would have suffered even more severely from the strong competition they faced to-day. His own faith in tariffs was unshaken and he was still dogmatic in his belief in a block system, varying with the size of the house. Mr. Nisbet had spoken of conditions of labour, wages, zoning, and grading, and those of them who were on the Joint Industrial Council had great sympathy with his remarks. He was afraid that the Unions' motto was "What we have we hold." He had no great hopes of being able to rid themselves of the anomalies and inequalities in wage rates or of reaching a stage when men would be paid according to their deserts. Control of a competitive trading concern, if it lay in the hands of men who needed votes, was bound to be inefficient. He did not know how they were to improve the quality of the personnel of those in control, but it might possibly come through the nationalization of all fuel resources, which would bring co-ordination in its train. When that happened they would have an end of those absurdities of which both Mr. Campbell and Mr. Gavin had spoken.

Mr. **D. D. Melvin** (Edinburgh) agreed with what Mr. Fulton had said regarding free cookers. A similar policy, he thought, might perhaps be adopted with gas fires. Mr. Nisbet had said that in Paisley he found a great many of the occupants of a tenement used their water heaters at the same time. The diversity factor could be easily ascertained, but he felt he could not agree with Mr. Nisbet and that the figure would be more like 25%. He was at one with the Author of the Address in what he said regarding tariffs. If they brought these down after the war the claims of the poor consumer would be brought to their attention.

Mr. **Nisbet** pointed out that in Paisley many tenement occupants were engaged in the factories and were off for meals at the same time. This accounted for the water heaters being used at the same time. The position might be different in other towns.

Fertilizer Prices

The Minister of Supply has issued a Direction (No. 4) (S.R. & O., 1940, No. 1103, price 1d.), under the Control of Fertilizers (No. 1) Order, 1939, fixing the maximum prices of certain fertilizers for the months of July, August, and September. The price of superphosphate of lime may be advanced by not more than 5s. 6d. a ton over the Spring, 1940, price, and of ground phosphate by 3s. In the case of compounds equivalent increases are permitted in the prices of the phosphoric acid content, but the additions in respect of bags and general charges remain unchanged. The other elements in the prices of compounds, that is the charges for potash and sulphate of ammonia, have been increased proportionately to the higher prices of these materials.

Where delivery of any of the fertilizers covered by the above Order is taken during the month of August a rebate of 1s. 6d. per ton is allowed, and during the month of July the rebate is 3s. per ton. It will be recalled that farmers are urged in their own interests to lodge their orders for fertilizers and to be ready to take delivery as early as they can.

The foregoing is quoted from the *Board of Trade Journal*.

COAL CLEANING

From a Paper to the Institute of Fuel

By
ARTHUR A. HIRST, D.Sc., F.Inst.P.
(Coal Treatment Research Laboratory, University of Birmingham)

COAL cleaning processes should be applied in such a fashion as to fulfil one or more of the following conditions:

(1) The process should not be required to operate under conditions in which it is inefficient.

(2) If operation under conditions of inefficient working is unavoidable, the process should be arranged so that, as far as possible, contamination of the washed products with sinks of higher ash content is confined to products themselves high in ash, and to fines rather than nut sizes.

(3) Where the required separation permits, the characteristics of the process which cause inaccurate separation may be used to advantage.

So much has been written in favour of cleaner and yet cleaner coal, culminating in the demand for pure coal, that it may be well to recall that Grumell, who originally advocated the commercial production of pure coal, rightly pointed out that it was not economically desirable to use low ash coal for any and every purpose. Recently, Crawford has shown that the cleaning of coal, even at a specific gravity as high as 1.6, may result in a total loss of 4.5% of the heat available in the raw material.

Raw coal comprises a greater or less proportion of middlings, in addition to pure coal and dirt, and any scheme for the production of pure coal must provide for the utilization of these middlings. Frequently it will be found that the problem of producing pure coal is easier of solution than the problem of adequately disposing of the middlings.

Many pure coal enthusiasts if asked, "What is going to happen to the middlings?" will reply, "Oh! the colliery burns those," or "It's quite simple! They are sold as a low grade fuel." Unfortunately, the problem is not quite so simple. In the first place, there is a limit to the amount of low grade fuel that a colliery can burn, and, in any case, most pits have existing sources of low grade fuel. Secondly, in a competitive market, coal with an ash

TABLE 1.
THE RELATIONSHIP BETWEEN THE ASH IN MIDDLINGS, THE ASH IN PRIMARY CLEANS, AND THE YIELD OF "PURE" COAL.

Pure Coal.		Middlings.					
Ash. %	Yield. %	Ash. %					Yield. %
2.0	30	4.9	5.6	6.3	7.0	7.7	70
	40	5.3	6.2	7.0	7.8	8.7	60
	50	6.0	7.0	8.0	9.0	10.0	50
	60	7.0	8.3	9.5	10.8	12.0	40
	70	8.7	10.3	12.0	13.7	15.3	30
	80	12.0	14.5	17.0	19.5	22.0	20
	85	15.3	18.7	22.0	25.3	28.7	15
	90	22.0	27.0	32.0	37.0	42.0	10
1.5	30	5.1	5.8	6.5	7.2	7.9	70
	40	5.7	6.5	7.3	8.2	9.0	60
	50	6.5	7.5	8.5	9.5	10.5	50
	60	7.8	9.0	10.3	11.5	12.8	40
	70	9.8	11.5	13.2	14.8	16.5	30
	80	14.0	16.5	19.0	21.5	24.0	20
	85	18.2	21.5	24.8	28.2	31.5	15
	90	26.5	31.5	36.5	41.5	46.5	10
		4.0	4.5	5.0	5.5	6.0	
		Ash in Primary Cleans %.					

content substantially greater than 7% is not easy to sell and, when sold, usually realizes a low price. If, therefore, the middlings have to be sold at a low price, the pure coal will have to be sold at a high price, and it may cease to be an attractive proposition.

The "Saleability" of the middlings depends principally on their ash content. In the production of pure coal with a given ash content, the ash content of the middlings is rigidly related to the ash content of the primary cleans and the yield of clean coal. Table 1 shows, for yields of pure coal varying from 30 to 90%, and for primary cleans varying in ash content from 4.5 to 6%, the ash content in the middlings obtained when making a pure coal with either 2 or 1.5% ash.

The middlings ash content increases rapidly when the yield of pure coal exceeds 60%, the effect being particularly marked when the pure coal ash is 1.5%. For a 50% yield of pure coal, 2% ash, the middlings ash is 7% or under, only for primary cleans with 4 and 4.5% ash; for primary cleans with 5, 5.5, and 6% ash, the corresponding middlings ash content are respectively 8, 9, and 10%. If the pure coal has 1.5% ash and the yield is 50% only primary cleans with 4% ash give a middlings ash under 7%, though the ash is only 7.5% in the case of primary cleans with 4.5% ash. The middlings ash contents are 8.5, 9.5, and 10.5% for primary cleans with ash contents of 5, 5.5, and 6% respectively.

An increase in the ash content of the primary cleans is accompanied by a much larger increase in the ash content of the middlings, the increase in the middlings ash being greater for higher yield of pure coal. Clearly, therefore, in the preparation of the *primary* cleans, an accurate separation is specially desirable. In my opinion the ash content of the primary cleans should not exceed 5%, a rather lower ash being preferable.

The relationships expressed in Table 1 are arithmetical relationships, and the corresponding separations are not necessarily either theoretically or practically possible. It should be observed, however, that, if it is possible in practice to obtain a given yield of pure coal, any lower yield may be obtained simply by the method of mixtures.

Suppose the primary cleans, obtained by separating at approximately 1.5 s.g., have 4.5% ash. If re-separated at 1.35 s.g., the yield of pure coal might be 80% and its ash content 2%, the corresponding middlings ash being 14.5%. By mixing part of the pure coal with the middlings it is possible to obtain 50% of pure coal with 2% ash and 50% of middlings with 7% ash. Similarly, if the ash content of the primary cleans is 4% it may be possible to obtain either 85% pure coal with 2% ash and 15% middlings with 15.3% ash, or alternatively 50% pure coal with 2% ash and 50% middlings with 6% ash. The alternative separations are compared below:

	Tons.	Ash %.	Tons.	Ash %.
1. Primary Cleans ...	100	4.5	100	4.0
2. Pure Coal	80	2.0	85	2.0
Middles	20	14.5	15	15.3
3. Pure Coal	50	2.0	30	2.0
Middles	50	7.0	50	6.0

In process 3 the yield of pure coal is deliberately sacrificed with a view to obtaining a marketable middlings. The process appears to offer attractive possibilities, particularly when used in the production of low ash coal for preparing smokeless fuel. In this case coal with 6% ash would be very little inferior, as a boiler fuel, to coal with 4% ash and the enhanced value of the pure coal fraction will be mostly profit.

Process 3, which may be termed the method of partial separation, obviously does not necessitate a particularly accurate separation, since we are aiming at a 50% yield of pure coal when a considerably higher yield may be theoretically possible. In my experience, providing one starts with a high grade coal, and for the reasons described earlier this provision is desirable in any case, a jig washer will easily effect the desired separation, even when treating fines.

It should be noted that, although a jig washer operating as above will usually give a pure coal and middlings of the requisite ash contents, the separation obtained, being only partial,* may not suffice for some special purposes, as, for instance, when it is desired to separate bright and dull coal.

It may be contended that by separating at a specific gravity lower than that required to give a pure coal with 2% ash, it would be possible to obtain a middlings with an ash content under 7%, together with a "pure" coal of exceptionally low ash. The contention is justified, but it is well to be aware of the difficulties which may be involved.

The ash content of the 1.35 to 1.60 s.g. fraction in the primary cleans will normally be well over 10%, so that in order to obtain a middlings with under 7% ash it will be necessary to separate at a specific gravity less than 1.35.

The problems encountered in separating at specific gravities lower than 1.35 may not be familiar to all members of the Institute of Fuel and are best illustrated by an actual example.

Table 2 gives a detailed fractional float and sink analysis of two sizes of the same washed coal and serves to demonstrate the

TABLE 2.
FRACTIONAL FLOAT AND SINK ANALYSIS OF TWO SIZES OF THE SAME WASHED COAL.

1½ in. to ⅜ in.			⅜ in. to ⅛ in.		
Specific Gravity.	Weight %	Ash %	Specific Gravity.	Weight %	Ash %
1.28 Float ...	1.4	1.23	1.24 Float ...	0.9	1.43
1.28-1.29... ...	8.5	1.20	1.24-1.26 ...	4.5	1.01
1.29-1.30 ...	31.3	1.29	1.26-1.28 ...	9.2	1.05
1.30-1.31 ...	19.5	1.47	1.28-1.29 ...	35.2	1.09
1.31-1.32 ...	15.2	1.51	1.29-1.30 ...	19.3	1.23
1.32-1.34 ...	16.5	1.78	1.30-1.32 ...	13.5	1.78
1.34 Sink ...	7.6	—	1.32-1.34 ...	4.3	2.74
			1.34 Sink ...	13.1	—

force of two observations which in my experience are typical of the problem of separating at very low specific gravities—namely:

(1) The reduction in ash content accompanying a lower specific gravity of separation is not marked. In extreme cases a lower specific gravity of separation may bring about an increase in ash.

* In the pure coal product obtained with a jig there may be about 1% of material just sinking at 1·40 s.g. Such sinks are usually permissible.

(2) The separation becomes exceedingly difficult on account of the large proportion of material with a specific gravity very close to the specific gravity of separation.

Consider the difficulty of accurately separating the 1½ in. to ¾ in. size at a specific gravity of 1.30. When separating at 1.30 s.g. we should get 41.2% floats and 58.8% sinks. If, however, the specific gravity of separation should fluctuate as little as ±0.01, the yield of floats would vary from 9.9 to 60.7% and the yield of sinks from 90.1 to 39.3%. Such variations in yield would render the working of the process, to say the least, a little difficult. The ash content of the pure coal would be substantially unaffected by the variations in yield, but the middlings ash content would fluctuate over a wide range.

By way of comparison, when a jig is used to prepare a pure coal and saleable middlings, the pure coal ash is not quite so low as would be obtained by a specific gravity separation, but, on the other hand, the yield of pure coal and the ash content of the middlings remain substantially constant. As the purest coal is usually found in the finest sizes, the ability of a jig to treat fines is a point in its favour.

Automatic Lighters

A NEW patent granted to Cannon Iron Foundries, Ltd., R. T. Clayton, William Barnsley, Ltd., and T. Barnsley (No. 519,313; application date, September 19, 1938) relates to igniters of the frictional type.

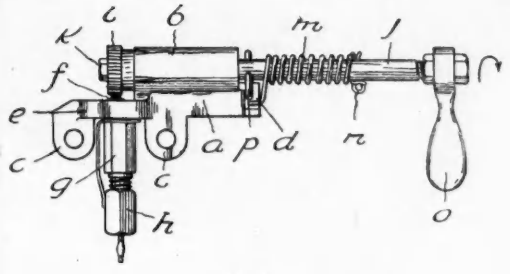


Fig. 1

Figure 1 is an elevation of the appliance. In the diagram, *a* is a small casting or stamping forming an attachment block which provides a shaft bearing *b*, attachment lugs *c*, and an anchorage or torsion block *d*. A bracket part *e* between the lugs serves for the attachment and guidance of the "flint" rod *f*. *g* is a shouldered sleeve which forms the guide or housing for the rod. On this sleeve is a screw-threaded part on to which a sleeve-nut or cap *h* screws in order to compress a spring below the rod and so adjust the degree of pressure of the rod against the wheel *i*. A spring blade may be arranged between the "flint" container sleeve and the bracket piece *e* of the block *a* to form a catch device for the adjusting sleeve nut. The wheel *i* is free on the operating shaft *j* and is secured against removal by the nut *k*. A preloaded torsion spring *m* around the shaft *j* is anchored at its front end to the block *d* and at its rear end to a pin *n* in the shaft. The usual operating handle on this shaft is referred to by the letter *o*. A limiting pin *p* projecting through the shaft, serves to stop the rotary movement of the shaft *j* in each direction owing to the engagement of the two ends of the pin with the opposite sides of the anchorage or torsion block *d*. In the illustrated position, the pin *p* is engaging the block to prevent any anti-clockwise rotation of the shaft *j* from the inactive position, which if it occurred would release the preloading of the spring *m*.

In advance of the bearing of the shaft *j* in the bearing part *b* of the attachment block, the part *b* has a larger bore so that a torsion spring *q* can be arranged close around the end of the shaft *j* but not affixed to it, and having one end, or a pin secured in one end, adapted to enter a hole in the face of the friction wheel to establish a driving connexion therewith. In this arrangement the manual movement of the shaft *j* by the handle *o* in the direction of the arrow in Fig. 1, tends, owing to the friction of the shaft against the turns of the clutch spring, to open that spring and thus there is not sufficient friction between the two for the clutch spring to move the wheel *i* against the grip of the "flint" *f* which is in rubbing contact with its toothed periphery. The wheel thus remains at rest during this manual stroke but this stroke puts greater torsional load on the shaft spring *m*. This results in a very quick rotation of the shaft *j* in the reverse direction by the spring *m* when the handle is freed and this rotation tends to wind the clutch spring tightly around the shaft so that it rotates with the shaft and drives the wheel to give the required spark.

The patentees claim that the complete device is simple in construction and very effective in operation.

Coke Oven Charge Levelling

WOODALL-DUCKHAM, LTD., and A. Taylor, have been granted a patent (No. 521,909; application date, Nov. 28, 1938), concerned with the levelling of charges in coke ovens. It is usual to make the height and width of the leveller-door in a coke oven greater than the corresponding dimensions of the leveller-bar. A gap consequently exists between the leveller-door and the bar, and air has a tendency to enter the oven through this gap, more especially when the gas off-take from the oven is situated at the same end of the oven as the leveller-door (*i.e.*, on the "pusher" side of the oven battery). The object of the patent is to seal substantially the inlet for the leveller-bar into the coke oven during the levelling operation.

Figure A is a side sectional elevation. The oven door 1 contains a leveller-bar door opening 2, through which the leveller-bar 3 enters. As shown, the leveller-bar is of girder construction comprising side members joined at intervals by cross-pieces 4. The cross-section of the leveller-bar is substantially less than the size of the leveller-door opening so that a gap 5 would normally exist, through which air could enter the oven.

The spillage-chute 6, which is mounted on the machine carrying the pusher-ram and the leveller-bar, receives any coal drawn out of the oven in the rearward strokes of the leveller-bar, and for this purpose, during levelling, the spillage-chute occupies the position shown in Fig. A. The spillage-chute carries a sealing-plate 7, which has an aperture for the passage of the leveller-bar. The sealing-plate is adjustably attached to the spillage-chute by the side-plates 8, by means of the bolts 9 which pass through the slots shown. By this arrangement the vertical level of the sealing-plate 7 can be adjusted as desired to suit any alteration in the height of the leveller-bar.

The size of the sealing-plate is greater than the actual opening of the leveller-door, in order to provide a sufficient amount of overlap to ensure that the opening is sealed, even if the leveller-bar is not positioned truly centrally in the door opening. The sealing-plate also carries a rearwardly-extending plate 10 which lies along the top of the leveller-bar.

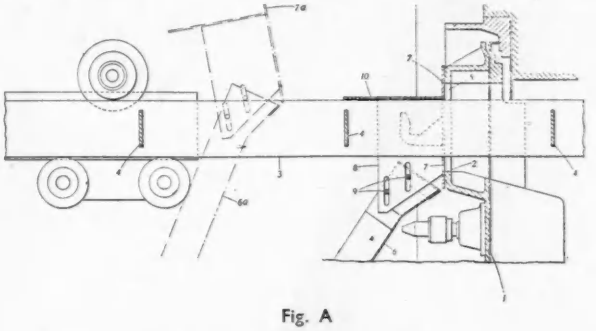


Fig. A

In the operative position, the spillage-chute and the sealing-plate occupy the position shown in full lines in Fig. A. It will be seen that the annular gap between the leveller-bar and the leveller-door opening is closed thereby. A leakage path for air does exist through the interior of the leveller-bar if the latter is of open girder construction, but the amount of air entering by this path is comparatively small and is further reduced by the baffling effect of the plate 10 and the cross members 4. After levelling, when the leveller-bar is withdrawn from the oven, the spillage-chute and the sealing-plate occupy the out-of-service position shown respectively at 6*a* and 7*a*. By mounting the sealing-plate on the spillage-chute as shown, it is held in position during the levelling operation and is not disturbed by the reciprocating motion of the leveller-bar.

Year's Working at Manchester

The sales of the Manchester Corporation Gas Department during the year ended March 31 amounted to 5,850,885 cu.ft., a decrease of 6.45% when compared with the sales during the preceding twelve months. At the outbreak of war there was an increase equal to 2.59% over the sales for the corresponding period in 1938. Among the factors which have adversely affected sales since then is the evacuation of a section of the population. Much new business, mainly of industrial character, has been secured, and it is hoped that when these new loads come into full operation they will at least counterbalance the decrease suffered during the past year. Some increase in the price of gas was necessary to meet the unusual circumstances arising out of wartime conditions. A little more than 30% of the total sales over the past twelve months have been under the optional two-part tariff; while the gas consumed for industrial and commercial purposes was 41½% of the total quantity. Modified street lighting is now being installed in the principal thoroughfares. The balance of revenue carried to Profit and Loss Account on the present occasion is £160,574, which compares with £198,651 a year ago.

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Products Prices

The London Market

July 8.

The present position of tar products in London is as under: Owing to the entire absence of Continental demand, it is not possible to quote a value for pitch. Creosote is about 4¾d. to 5d. per gallon; refined tar, 3½d. to 4d. per gallon; the price of pure toluole under the Ministry of Supply Order is just under 2s. 5d. per gallon; pure benzole, 1s. 10d.; 95/160 solvent naphtha, 1s. 11d. to 2s., and 90/160 pyridine about 18s. 6d., all per gallon naked; refined naphthalene crystals, £23 per ton in bags, all *ex* makers' works.

The Provinces

July 8

The average prices of gas-works products during the week were: Pitch.* Toluole, naked, North, 1s. 9½d. (Controlled by the Ministry of Supply Order No. 1, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 9d. to 9½d. Solvent naphtha, naked, North, 1s. 8d. to 1s. 9d. Heavy naphtha, North, 1s. 4½d. to 1s. 5½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4½d. to 4¾d.; Scotland, 4½d. to 4¾d.; low gravity, 4½d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's. 3s. 6d. to 3s. 7½d. Naphthalene, £15 to £20. Salts, 75s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal. Heavy oil: Unfiltered anthracene oil, (min. gr. 1,080), 5¼d. to 5½d.; filtered heavy oil (min. gr. 1,080), 5¾d. to 6d.; heavy anthracene oil gr. less than 1,080, 6d. to 6¼d.

* Pitch.—Owing to the Export Trade being at a standstill due to the position in France it is practically impossible at the moment to quote a market price for pitch. For the same reason no quotation can be given for crude gas-works tar. The quoting of a price in last week's "JOURNAL" was an error and the quotation should be ignored.

Scotland

GLASGOW, July 6.

There is no change of any importance to record in market conditions during the week. New business is still rather spasmodic.

Refined tar.—Quite a good demand exists for delivery in the home market at 4¼d. to 4½d. per gallon, while for export supplies are available at 3½d. per gallon, both f.o.r. naked.

Creosote oil.—Plentiful supplies of all grades are available at the following prices: Specification oil, 5½d. to 5¾d. per gallon; low gravity, 6½d. to 7d. per gallon; neutral oil, 6d. to 6½d. per gallon; all *ex* works in bulk.

Cresylic acid.—Little business has been conducted in this product with makers' prices approximately as under: Pale, 97/99%, 2s. 1d. to 2s. 2d. per gallon; pale, 99/100%, 2s. 6d. to 2s. 8d. per gallon; dark, 97/99%, 1s. 10d. to 1s. 11d. per gallon; all *ex* works in buyers' packages.

Crude naphtha is steady at 6½d. to 7½d. per gallon *ex* works in bulk, according to quality.

Solvent naphtha.—90/160 grade now commands 1s. 9d. to 1s. 10d. per gallon and 90/190 heavy naphtha is unchanged at 1s. 4½d. to 1s. 5½d. per gallon.

Motor benzole is 1s. 8d. to 1s. 8½d. per gallon.

Pyridine.—Supplies are becoming more plentiful and to-day's values are called 17s. to 18s. per gallon for 90/160 grade and 19s. to 20s. per gallon for 90/140 grade.

Contracts Advertised

Purchase and Removal of Obsolescent Gas Plant.

Spenborough Gas Dept. [p. 90.]

Demolition of Obsolescent Gas Plant.

Spenborough Gas Dept. [p. 90.]

Trading Results

John Summers & Sons

Following the announcement of an "A" Ordinary dividend of 8½% and a dividend on the "B" ordinary stock of 4½%, the 1939 accounts of John Summers & Sons, the iron and steel manufacturers, reveal a remarkable increase in profits. Gross earnings last year rose from £328,209 to £879,429 and even after providing £302,162, against £90,855 for taxation, the net figure has more than doubled—£485,465 against £221,207. Out of net earnings £400,000 is being transferred to general reserve and £131,421 is carried forward. The report states that the hot strip mill began operations on a small scale last November and has been on a production basis since the beginning of 1940. In the consolidated balance-sheet the effect of the issue of £2,000,000 of 4½% first mortgage debenture stock is shown in the repayment of £1,403,765 of bank overdrafts and a rise from £69,004 to £947,795 in the cash holding.

W. G. Allen & Sons (Tipton), Ltd.

At the 30th ordinary general meeting of W. G. Allen & Sons (Tipton), Ltd., the Chairman (Mr. Arthur Colgate) stated that the profit for the year, after meeting all expenses and providing for depreciation—but before providing for taxation—amounted to £29,270 as against £24,181 the previous year. After allowing for taxation and adding the amount brought forward from the last account, the amount available for distribution was £17,520. Out of this an interim dividend of 2½%, less tax, had already been paid, and it was now proposed to pay a final dividend of 7½%, less tax, making a total for the year of 10%, less tax. Of the balance, it was proposed to place a sum of £4,000 to a dividend equalization fund, leaving £5,784 to be carried forward—an amount slightly in excess of that brought in. Capital had been increased by £20,425 to £122,550, nearly half of which increase had gone into land, buildings, and equipment, while the balance had helped to finance the increased stock and work in progress. The Company had acquired the bulk of the shares of Multi-Ray Heaters, Ltd., whose business they believed they were in a position to develop on a substantial scale.

Matthew Hall & Co., Ltd.

Presiding at the annual meeting of Matthew Hall & Co., Ltd., the Chairman (Mr. Bertram Baden, M.C.) stated that the profit for the year, after making provision for taxes, &c., amounted to £21,417, which on the year's turnover of more than £1,000,000 constituted a moderate return. The Company was fortunate in having in hand large contracts for the Admiralty, War Office, Air Ministry, Office of Works, and Ministry of Supply. During the year they had been engaged on special air conditioning, gas filtration, vacuum air services, &c., and in a number of factories high-pressure hot water heating was now being used, and they were one of the few firms which had carried out this type of work. They had been entrusted with some of the largest heating contracts in the country; one of these, a steam-heating contract, was for over £150,000. A dividend at the rate of 25%, less tax, on the ordinary shares was declared.

Allied Ironfounders.—Profit £112,424 (£198,428); 2½%, making 5% (9%); forward £178,197 (£160,918 after cent. obsolescence and depreciation reserve £20,000 and contingency reserve £15,000). Total trading profits of subsidiaries and sub-subsidiaries, after proportion of A.R.P. expenditure, £216,875 (£292,937). Taken from year's profits for income tax £104,423 (£84,221) and for N.D.C. £10,273 (£15,035).

A.R.P.

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GAS STOCKS AND SHARES

There was more activity on the Stock Exchange last week than for some time past and prices in many directions began to move up. The success of the 2½% War Loan "on tap" gave a fillip to British Funds and some substantial recoveries took place, 2½% Consols closing 1 point higher at 72. Home rails also shared in the brighter conditions although the volume of business in this section was not large. Leading industrials were in good demand and a comparison of current prices with those ruling at the end of June shows a very satisfactory upward trend. Oil and rubber shares also hardened and more interest was displayed in mining shares.

From a glance at the Stock and Share Lists it is evident that, except for the small increases in Gas Light and Newcastle units, the improved conditions in other sections have not yet percolated to the Gas Market. A further large number of falls occurred last week, among the heaviest being the following: Alliance and Dublin 17½ points, Barnet 7, Brighton 5% 8, Gas Consolidation 1s. 6d., Portsmouth 5% 7, and South Metropolitan 6% preference 6½ points, business in the latter being recorded at par last week. Bournemouth 7% with a rise of 4½ points to 119½ has almost reverted to its former level. A number of debenture stocks also reacted a few more points and with some of these now offering 5% and over a good opportunity is afforded to those investors who, after lending all they can afford to the Government, must of necessity and with safety increase their overall yield.

On the Provincial Exchanges the only fall of note was that of Sheffield which closed 4 points lower at 120½, while in the Supplementary List the nominal quotation of the Romford stock was marked down 8 to 105.

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
1,767,439	Mch. 11	8	7	Alliance & Dublin Ord. ...	90—100	−17½
374,000	July 1	4	4	Do. 4 p.c. Deb. ...	75—80*	−7½
957,608	May 13	5	5	Asscd. Gas & Water U'd'ts Ord.	12/—14/-	−1/6
500,000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	15/6—17/6	...
535,545	"	4	4	Do. 4 p.c. Red. Cum. Pref.	14/6—16/6	...
336,646	"	4	4	Do. 4 p.c. Irred. Cum. Pref.	13/—15/-	...
750,000	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	82—87	...
560,070	Feb. 19	7	7	Barnet Ord. 7 p.c.	115—120	−7
300,000	Apl. 8	1/4⅝	1/9⅜	Bombay, Ltd.	19/6—21/6	...
181,915	Feb. 26	9½	9½	Bournemouth Sliding Scale ...	145—150	...
690,526	"	7	7	Do. 7 p.c. max. ...	117—122	+4½
493,960	"	6	6	Do. 6 p.c. Pref. ...	115—120	...
50,000	June 17	3	3	Do. 3 p.c. Deb. ...	65—70	...
362,025	"	4	4	Do. 4 p.c. Deb. ...	87—92	−3
335,000	"	5	5	Do. 5 p.c. Deb. ...	95—100	−2
357,900	Feb. 19	7½	6⅜	Brighton, &c., 6 p.c. Con. ...	103—108	...
659,955	"	6⅜	5¼	Do. 5 p.c. Con. ...	90— 95	−8
205,500	"	6	6	Do. 6 p.c. 'B' Pref. ...	103—108	...
855,000	Mch. 11	7	8	British Ord.	85—95	...
100,000	June 17	7	7	Do. 7 p.c. Pref.	112—117	−6
350,000	"	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	"	4	4	Do. 4 p.c. Red. Deb.	75—80	...
450,000	"	5	5	Do. 5 p.c. Red. Deb. ..	93—98	...
100,000	22 May '33	6	4	Cape Town, Ltd.	¼—⅜	...
100,000	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref.	1—1½	...
150,000	June 17	4½	4½	Do. 4½ p.c. Deb.	52—57	...
626,860	Jan. 29	6	5⅗	Cardiff Con. Ord.	90—100	...
237,860	June 17	5	5	Do. 5 p.c. Red. Deb. ...	95—100	...
98,936	Apl. 8	2/-	2/-	Colombo Ord.	1½—1½	...
24,510	"	1/4⅜	1/4⅜	Do. 7 p.c. Pref.	19/6—21/6	...
739,453	Mch. 26	-/11.48	-/11.48	Colonial Gas Assn. Ltd. Ord. ...	14/6—16/6	...
296, 144	"	1/3.30	1/3.30	Do. 8 p.c. Pref.	20/-—22/-	...
1,775,005	Jan. 29	4	2	Commercial Ord.	35—45	−5
140,000	Feb. 19	4	4	Do. 4 p.c. Red. Pref. ...	87—92	...
620,000	June 10	3	3	Do. 3 p.c. Deb.	58—63	...
286,344	Feb. 19	5	5	Do. 5 p.c. Deb.	95—100	...
200,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	...
807,560	Feb. 12	7	7	Croydon sliding scale	88—98	−2
644,590	"	5	5	Do. max. div.	85—90	...
620,385	July 1	5	5	Do. 5 p.c. Deb.	93—98*	−2
208,660	Feb. 19	5	5	Dudley, Brierley Hill & Dist. Ord.	98—103	...
82,275	"	5	5	Do. 5 p.c. Con. Pref. ...	93—98	...
79,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	93—98	−2
239,000	Jan. 29	5	88/6	East Hull Ord. 5 p.c.	70—80	...
187,215	Feb. 12	5⅜	5⅜	East Surrey Ord. 5 p.c. ...	93—98	...
176,211	June 17	5	5	Do. 5 p.c. Deb. ...	95—100	...
250,000	Nov. 13	8	4	Gas Consolidation Ord. 'B' ...	13/6—15/6	−1/6
250,000	May 13	4	4	Do. 4 p.c. Red. Cum. Pref.	15/—17/-	...
19,152,410	Jan. 29	5⅜	3⅜	Gas Light & Coke Ord. ...	11/9—12/9a	+/3
2,600,000	"	3½	3½	Do. 3½ p.c. max.	55—60	...
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	78—83	−2
2,993,000	Jan. 2	3¾	3¾	Do. 3¾ p.c. Red. Pref. ...	80—85	...
8,602,497	June 3	3	3	Do. 3 p.c. Con. Deb. ...	61—66	...
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	99—104	...
3,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	95—100	...
700,000	Mch. 11	3½	3½	Do. 3½ p.c. Red. Ded. ...	80—85	...
270,466	Feb. 19	6	6	Harrogate New Cons.	93—98	...
157,500	Apl. 8	‡1/-	‡1/-	Hong Kong and China Ord. ...	⅜—⅝	...
5,600,000	May 13	4	8	Imperial Continental Cap. ...	30—40	−5
172,810	Jan. 29	3½	3½	Do. 3½ p.c. Red. Deb. ...	70—75	...
63,480	June 24	3	3	Maidstone 3 p.c. Deb.	54—59	...
45,000	June 10	†8	†10	Malta & Mediterranean ...	88—98	...
				Metropolitan (of Melbourne) ...		
392,000	Apl. 1	5½	5½	5½ p.c. Red. Deb.	95—100	...
231,977	Feb. 19	5	5	M.S. Utility 'C' Cons.	75—80	−2
968,658	"	4	4	Do. 4 p.c. Cons. Pref. ...	77—82	−3
390,076	June 24	4	4	Do. 4 p.c. Deb. ...	85—90	...
148,955	June 24	5	5	M.S. Utility 5 p.c. Deb. ...	95—100	...
125,000	July 1	3½	3½	Do. 3½ p.c. Red. Bds. ...	87—92*	−3
675,000	May 6	†4	†4	Montevideo, Ltd.	55—60	−3
250,000	Mch. 18	7½	5.7⅛	North Middlesex 6 p.c. Con. ...	103—108	...
396,160	Jan. 29	5	5	Northampton 5 p.c. max. ...	97—102	...
300,000	Apl. 29	9	7	Oriental, Ltd.	108—113	...
468,537	June 3	7	8	Plymouth & Stonehouse 5 p.c.	105—115	...
621,667	Feb. 5	8⅛	8⅛	Portsmouth & Gosport Cons.	100—105	−5
241,446	"	5	5	Do. 5 p.c. max.	75—80	−7
73,350	"	5	5	Do. 5 p.c. Pref.	87—92	−1
75,000	"	4	4	Do. 4 p.c. Pref.	72—77	−3
114,000	Feb. 5	5	5	Preston 5 p.c. Pref.	88—93	...
247,966	June 17	4	4	Primitiva 4 p.c. Cons. Deb. ...	91—96	...
625,959	Jan. 15	4	4	Do. 4 p.c. Red. Deb. ...	91—96	...
15,000	Mch. 11	6	6	San Paulo 6 p.c. Cum. Pref. ...	4½—6½	...
441,275	Apl. 29	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	15/6—17/6	...
460,810	Mch. 11	-/10⅛	-/10⅛	" " 4½ p.c. Cum. Pref. ...	16/6—18/6	...
133,201	Feb. 12	8½	5	Shrewsbury 5 p.c. Ord. ...	105—115	...
9,000	June 17	‡4	‡5	South African Ord.	3½—4½	...
1,996,297	Apl. 29	1/2⅜	1/-	South East'n Gas Cn. Ld. Ord.	11/-—13/-	...
1,000,000	Mch. 4	-/10⅝	-/10⅝	Do. 4½ p.c. Red. Cum. Pref.	14/-—16/-	...
769,191	"	4	4	Do. 4 p.c. Cum. Pref. ...	13/-—15/-	...
450,000	Feb. 12	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
150,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...
6,709,895	"	5	4	South Met. Ord.	37—42	−½
1,135,812	"	6	6	Do. 6 p.c. Irred. Pref. ...	100—110	−6½
850,000	"	4	4	Do. 4 p.c. Irred. Pref. ...	78—83	−2
1,895,445	July 1	3	3	Do. 3 p.c. Deb.	60—65*	−1
1,000,000	Jan. 15	5	5	Do. 5 p.c. Red. Deb. ...	97—102	...
600,000	"	3½	3½	Do. 3½ p.c. Red. Deb. ...	92—97	...
1,543,795	Feb. 5	6	3	South Suburban Ord. 5 p.c. ...	70—75	...
512,925	"	5	5	Do. 5 p.c. Pref.	90—95	...
500,000	"	4	4	Do. 4 p.c. Pref.	73—78	...
250,000	"	3½	3½	Do. 3½ p.c. Red. Pref. ...	82—87	...
888,587	June 10	5	5	Do. 5 p.c. Deb.	95—100	...
250,000	"	4	4	Do. 4 p.c. Deb.	85—90	...
200,000	Feb. 12	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92	...
427,859	Apl. 15	-/9⅜	1/2⅜	S. Western Gas & Water Ord.	13/-—15/-	...
160,523	"	-/10½	-/10⅝	Do. 4½ p.c. Red. Cum. Pref.	15/-—17/-	...
110,000	June 17	4	4	Do. 4 p.c. Red. Deb. ...	85—90	...
750,541	Feb. 5	5	5½	Southampton Ord. 5 p.c. ...	73—78	...
148,836	June 17	4	4	Do. 4 p.c. Deb.	82—87	...
350,000	Feb. 12	5½	5½	Swansea 5½ p.c. Red. Pref. ...	97—102	...
200,000	June 24	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—95	...
1,076,490	Feb. 26	6½	5	Tottenham and District Ord....	87—92	...
409,835	"	5½	5½	Do. 5½ p.c. Pref.	100—105	...
62,235	"	5	5	Do. 5 p.c. Pref.	90—95	−2
453,380	June 10	4	4	Do. 4 p.c. Deb.	85—90	...
1,247,505	May 20	4	6	U. Kingdom Gas Cor. Ord. ..	12/6—14/6	−-/6
1,085,952	May 13	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	14/-—16/-	...
772,709	"	4	4	Do. 4 p.c. 1st Red. Cum. Pf.	14/-—16/-	...
745,263	June 17	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pf.	12/6—14/6	...
1,093,656	Mch. 18	3½	3½	Do. 3½ p.c. Red. Deb. ...	83—88	...
378,106	Mch. 11	7	7	Uxbridge, &c., 5 p.c.	95—100	...
133,010	"	5	5	Do. 5 p.c. Pref. ...	95—100	...
1,371,138	Feb. 5	6½	3½	Wandsworth Consolidated ...	68—73	...
2,525,768	"	4	4	Do. 4 p.c. Pref.	73—78	...
1,343,964	June 17	5	5	Do. 5 p.c. Deb.	93—98	−2
383,745	"	4	4	Do. 4 p.c. Deb.	85—90	...
400,000	"	3¾	3¾	Do. 3¾ p.c. Red. Deb. ...	87—92	...
558,342	Jan. 29	6¼	6	Watford and St. Albans Ord. ...	95—100	...
200,000	"	5	5	Do. 5 p.c. Pref.	90—95	−3
200,000	"	5½	5½	Do. 5½ p.c. Pref.	100—105	...
200,000	"	4	4	Do. 4 p.c. Rd. Pf. (1973/8)	85—90	...
100,000	"	33/4§	4	Do. 4 p.c. Red. Pf. (1959)	93—98	...
200,000	June 10	3½	3½	Do. 3½ p.c. Red. Deb. ...	85—90	...

a.—The quotation is per £1 of Stock. * Ex. Div. † Paid free of income-tax. ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Contd.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Nominal Quotations July 5.	Rise or Fall on Week.
202,152	Mch. 18	5	5	Ascot Ord.	80—85	...
128,182	Dec. 27	5	5	Do. 5 p.c. Pref. ...	88—93	...
31,035	Mch. 4	-/9⅜	-/9⅜	Associated Utilities 4 p.c. Pref.	15/—17/-	...
100,000	June 24	3½	3½	Do. 3½ p.c. Red. Deb. ...	87—92*	...
17,000	Feb. 19	8	8	Bognor Orig. Ord. 'A' ...	102—112	...
62,210	,,	8	8	Do. New Add. 'A' ...	102—112	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	95—105	...
37,440	Jan. 29	10	10	Cam. Univ. & Town 10 p.c. max.	145—155	...
125,970	,,	7	7	Do. 7 p.c. max.	100—110	...
39,025	,,	5	5	Do. 5 p.c. max.	80—90	...
96,410	Jan. 29	4½	4½	Cardiff 4½ p.c. Pref. ...	90—95	...
55,520	Feb. 19	6	6	Colchester 6 p.c. Pref.	100—105	...
90,550	Mch. 18	5	5	Do. 5 p.c. Deb. ...	95—100	...
150,000	Feb. 12	4	4	Croydon 4 p.c. Pref.	82—87	...
130,000	July 1	4	4	Do. 4 p.c. Deb.	83—88*	-2
65,000	Mch. 4	7½	6⅞	Eastbourne 'A' 5 p.c.	100—105	...
198,000	,,	6	5⅝	Do. 'B' 3½ p.c.	78—83	-7
112,312	,,	5	5	Do. 5 p.c. Pref.	90—95	...
130,000	June 24	5	5	Do. 5 p.c. Deb.	95—100*	...
130,500	Feb. 19	7½	7½	Exeter New Ord. (£10) ...	12—14	...
24,000	Aug. 21	8½	8½	Gt. Yarmouth 8½ p.c. max. (£30)	15—20	...
59,400	,,	7½	7½	Do. 7½ p.c. max. (£30) ...	10—15	...
51,160	June 10	5½	5½	Do. 5½ p.c. Deb.	100—105	...
152,600	Feb. 26	8	9	Guildford Cons.	110—120	...
54,055	,,	5	5	Do. 5 p.c. Pref.	90—95	...
68,250	June 17	5	5	Do. 5 p.c. Deb.	95—100	...
156,600	Feb. 19	7	5	Hampton Court Cons. ...	75—85	...
86,046	June 17	5	5	Holyh'd&N.W.G.&W.Cpn.Ord.	13/—15/-	...
80,000	Feb. 12	4	4	Lea Bridge 4 p.c. Pref.	75—80	...
60,000	,,	6	6	Do. 6 p.c. Pref.	105—115	...
94,876	June 17	4	4	Do. 4 p.c. Deb.	85—90	...
73,620	Mch. 18	8¼	8¼	Luton Cons. 'A'	115—125	...
107,960	Feb. 26	4	5½	Mid Kent Ord. (£10)	7½—8½	...
230,940	Feb. 5	10	10	Oxford & District Ord. ...	135—145	...
47,112	,,	5	5	Do. 5 p.c. Pref.	85—90	...
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
126,193	May 13	7½	7½	Peterborough Ord.	138—148	...
64,990	Mch. 18	7	7	Redditch Ord.	100—110	...
166,850	Feb. 19	8	8	Romford Ord.	100—110	-8
60,000	,,	4	4	Do. 4 p.c. Pref.	85—90	...
44,000	Mch. 18	5	5	Do. 5 p.c. Deb.	95—100	...
25,570	Feb. 12	5½	5½	Rugby 5½ p.c. Pref.	100—110	...
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	100—105	...
42,750	Dec. 11	5½	5½	Do. 5½ p.c. Deb.	102—107	...
110,950	Feb. 26	8	8	Ryde Ord.	100—110	...
270,086	Mch. 18	7	7	Slough Ord.	98—103	...
21,000	June 10	5	5	Do. 5 p.c. Deb.	95—100	...
28,872	May 13	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	14/—16/-	...
28,866	Mch. 18	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	14/—16/-	...
127,228	Feb. 19	5	7	Swindon Cons.	75—80	...
60,425	June 24	5	5	Do. 5 p.c. Deb.	90—95	-3
64,380	June 17	5	5	Torquay & Paignton 5 p.c. Pref.	83—88	...
130,000	Feb. 12	5	5	Wakefield Ord.	85—95	...
81,650	,,	5	5	Do. 5 p.c. max.	75—80	...
82,000	Jan. 29	6	6	Weymouth Ord.	82—87	...
273,626	Feb. 12	7	7	Wolverhampton Cons. Ord. ...	115—120	...
98,384	,,	6	6	Do. 6 p.c. Pref.	105—115	...
160,000	June 17	5½	5½	Do. 5½ p.c. Red. Deb. ...	98—103	...
106,490	Mch. 18	5½	5½	Wrexham Ord	75—85	...
90,000	June 24	5	5	York 5 p.c. Red. Deb.	94—99	...
133,640	Feb. 19	6	6	Yorktown (Cam.) 5 p.c. Cons.	82—87	...
120,000	,,	5	5	Do. 5 p.c. Pref.	85—90	...
35,000	June 17	5½	5½	Do. 5½ p.c. Deb.	103—108	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
347,756	Feb. 1	5	6	Bath Cons.	100—105	...
1,667,250	Feb.	5	5	Bristol, 5 p.c. max.	88—92	...
120,420	June 17	4	4	Do. 1st 4 p.c. Deb.	95—98	...
415,250	,,	4	4	Do. 2nd 4 p.c. Deb. ...	91—95	-3½
328,790	,,	5	5	Do. 5 p.c. Deb.	109—112	...
274,000	Feb. 26	5	5	Newport (Mon.) Ord.	91—94	...
13,200	Mch. 26	7	8⅝	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½	...
13,600	,,	5	6	Do. 7 p.c. 'B'	9½—10½	...
40,000	,,	5	6	Do. 7 p.c. 'C'	9½—10½	...
140,778	Feb. 12	5	5	Weston-super-Mare Cons.	88—92	...
64,338	Dec. 27	4	4	Do. 4 p.c. Deb.	90—95	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	140—150	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
157,150	Feb. 5	5	6½	Chester 5 p.c. Ord.	98—101	...
92,500	June 17	4	4	Do. 4 p.c. Pref.	83—87	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	84—87	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	94—98	...
2,167,410	Feb. 19	6	6	Liverpool 5 p.c. Ord.	100—102	...
245,500	June 17	5	5	Do. 5 p.c. Red Pref. ...	99½—102½	...
306,083	July 17	4	4	Do. 4 p.c. Deb.	99—101	...
106,280	Feb. 5	10	8	Preston 'A' 10 p.c.	160—170	...
188,219	,,	7	7	Do. 'B' 7 p.c.	115—125	...

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
122,577	Feb. 19	7	7	Blyth 5 p.c. Ord.	113—118	...
732,000	Feb. 19	4	4	Hartlepool G. & W. Cn. & New	65—68	...
2,430,267	Feb. 5	5	5 7/10	Newcastle & Gateshead Con.	17/—19/a	+/6
682,856	,,	4	4	Do. 4 p.c. Pref.	82—87	-1
776,706	Dec. 27	3½	3½	Do. 3½ p.c. Deb.	80—85	...
277,285	April 24	5	5	Do. 5 p.c. Deb. '43 ...	97—102	...
332,351	Feb. 5	6	6	Sunderland 6 p.c. max. ...	111—113	...

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
542,270	Feb. 12	6	9	Derby Con.	103—108	...
55,000	June 10	4	4	Do. 4 p.c. Deb.	96—102	...
20,000	June 24	5	5	Long Eaton 5 p.c. Pref. ...	9—11	...
80,000	June 24	5	5	Do. 5 p.c. Deb. ...	100—105	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 5.	Rise or Fall on Week.
10,000	Feb. 19	10	10	Great Grimsby 'A' Ord. ...	170—180	...
6,500	,,	10	10	Do. 'B' Ord. ...	170—180	...
79,000	,,	10	10	Do. 'C' Ord. ...	160—170	...
1,806,339	Feb. 26	6½	6½	Sheffield Cons.	119—122	-4
95,000	Jan. 2	4	4	Do. 4 p.c. Deb.	98—100	...

a The quotation is per £1 of Stock.
* Ex. div. ‡ For year.

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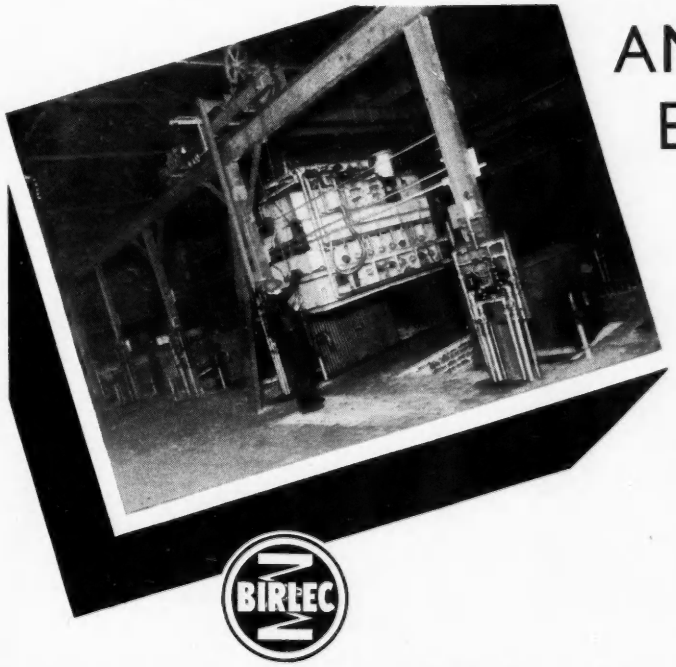

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